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THE PHARMACIST.

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POISONING BY CYPRIPEDIUM.

BY H. H. BABCOCK.

Working botanists have so often been poisoned by Rhus Toxicodendron that many of them have come to regard it as their special bane.

In the five seasons commencing with 1868, I was particularly careful not to touch this poisonous plant, not to pluck a specimen growing in its immediate vicinity, nor to receive from the hands of another person a freshly-gathered plant, for fear it might have come in contact with Rhus. In spite of these precautions, in the latter part of May or first of June in each year, I was poisoned so severely as to be confined to my room for several days. In June, 1872, after gathering many specimens of *Cypripedium spectabile,* I observed that my hands were stained with the purplish secretion of the glandular hairs with which its stem and leaves are densely clothed, and shortly after experienced a peculiar irritation about my eyes. The next day my whole face presented the appearance of a severe case of Rhus poisoning. On reviewing my notes of the previous years, I found that in each season the poisoning had appeared on the day after I had collected *Cypripedium spectabile* or *C. pubescens.* In 1873 and 1874, I collected more extensively than ever before, but suspecting that my previous sufferings had been caused by these two species of *Cypripedium* rather than the *Rhus,* took no unusual pains to avoid the latter, but refrained from touching either of the former with the bare hand. The result was what I had expected, for I escaped entirely the poisoning that I had begun to regard as inevitable, and am now convinced that upon myself, at least, *Cypripedium spectabile* and *C. pubescens* are capable of producing effects similar to those caused by *Rhus Toxicodendron.* Is it not possible that others, also, have wrongly attributed to *Rhus* the annoyance caused by these plants hitherto considered inoffensive? A decisive answer, either affirmative or negative, must depend upon the results of future experiment. Who will undertake it?

CHICAGO, Dec. 15.

PHARMACAL ITEMS.

BY ALBERT C. WHERLI.

In continuing the subject of Pharmacal Items, it is with a view of considering a few features which occasionally must present themselves to the observing pharmacist, in the various manipulations and operations of the shop.

It devolves upon all desirous of becoming thorough in the art of pharmacy, that the practical operations be mastered with ***skill, neatness*** and dexterity. Simple theoretical knowledge on the subject is of little avail, to insure good results, where a skillful use of the implements is required. As many operations are performed by the agency of different processes and utensils, it is necessary to ascertain which are best suited for the purpose.

On the same principle that one employs percolation instead of the old process of maceration, in making tinctures, etc., should we be actuated to use the best means to insure the best possible result, not slow to see wherein an advantage could be gained by any observation we might make, and no one should be so adverse to his own improvement but that from time to time he may observe them.

In the preparation of prescriptions the dispenser is often obliged to supply that which is necessary to its proper preparation. This is, to a large extent, the case in making pills, where the compounder is often allowed to exercise his own judgment in selecting some excipient which, with or without the addition of moisture, will form a suitable mass. It is right here that not a small amount of discretion can be exercised in preparing a pill mass, so that it may be of the proper consistence, at the same time easy of solution by the organs of digestion. As a drying excipient, a powder is usually employed best calculated to perform this duty, such as liquorice, marshmallow root, etc.; but the purity of these powders, and their advantage over some cheaper or simpler article, is questionable. These powdered roots are generally derived from worm-eaten or otherwise damaged material, which unfit the same for sale in the whole state, but in this comminuted condition pass the usual inspections, and thus are utilized in what may be considered a harmless way, although if we exercised the usual consideration for the stomach of those suffering from sickness, we would refrain from the use of such material. As a suitable substitute for these powders is common ***wheat flour***, against this every-day article no possible objection can be made on account of impurity, price or indigestibility, and therefore it is in every way superior to the inert powders generally used for the purpose of regulating, in pill-masses, the excessive amount of moisture which is frequently so great an annoyance to the dispenser.

The division of a pill-mass is merely a mechanical operation, usually performed by the aid of a pill-tile or pill machine. The latter has the claim of advantage in facilitating the speedy and accurate division of the mass, and but little can be suggested as an improvement to this time-honored implement, excepting it were that instead of having twenty-four grooves it be arranged in greater harmony with the decimal system of numerals, in having thirty grooves. This number, or a multiple, or a division of which is at the present time more frequently ordered than was formerly the practice by one or more dozen. At the same time each groove should be distinctly marked with a numerical, which can easily be done on the platform before each groove. These additions would be a useful improvement to this pharmacal instrument.

Long practical experience is not always essential for the attainment of a certain degree of skill and competency in the performance of the numerous acquirements of pharmacy, but when with it is combined close observation, analyzing thoroughly the advantages and disadvantages under which we, as well as others, may frequently labor, this only will lead to an acquisition of skill and dexterity, which we otherwise fail to obtain.

Especially is dexterity an object in the performance of the various duties of extemporaneous pharmacy, which should be cultivated by every one connected with the shop, so that as little time as possible may be consumed in dispatching the wants of our patrons. As a general rule, customers are impatient, and can not fully appreciate the importance of the necessary time required for the proper preparation of the remedies. Therefore, any thing that will expedite our operations, without endangering accuracy, is a desideratum.

It is a known fact that different localities have need of, or at least demand, a certain class of remedies in preference to others. This want depends chiefly on the character, etc., of the neighborhood. In these circumstances a little foresight on the part of the pharmacist can be of great service in utilizing his spare time, in selecting those most frequently prescribed and called for, and having them ready for use. But there are instances where this feature is objectionable, on account of the liability of articles to deteriorate when thus kept ready prepared. Where this is the case, we should not alone display dexterity, but devise ways by which such extemporaneous operations will be performed in the shortest possible time. As an illustration of an instance of this kind, the solution of citrate of magnesium can be cited:

This preparation, when made according to the officinal formula, is one of the "bugbears" of the conscientious pharmacist. The difficulty of stability can be overcome by the following change in the formula, which is to be followed in the spirit as well as the letter, until the point is reached, where it says, "Then add the bicarbonate of potassium and enough water to nearly fill the bottle, which must be closed with a cork, secured with twine." All of this is to be observed and followed, excepting the addition of the bicarbonate of potassium; this is to be omitted until the solution is called for, when the same is added, the cork secured with twine and the mixture shaken and delivered to the customer.

The advantage is obvious. First, the solution thus prepared does not so readily deposit *basic magnesia*, due to the excess of the citric acid; secondly, the freshness of the preparation, due to the large amount of carbonic acid which is liberated when the bottle is opened for use, at the same time adding to the palatableness of the solution.

To avoid any unnecessary delay in thus furnishing what is usually found ready for delivery when called for, the following simple arrangement we have found of great aid in facilitating the operation: A dozen long wooden pill boxes (Jayne's style), into each of which place the required quantity of bicarbonate of potassium (coarsely powdered) for each bottle; and these boxes can be placed in a rack cheaply constructed, by taking the cover of a one ounce morphine box (P. & W.'s), and fit into it a piece of tinned iron, perforated with a dozen holes, in which the boxes are placed. The piece of tin should be about eight and one-half inches long, so that an inch at each end can be turned down as a support for the rack.

The covers of the wooden boxes can be marked with a figure, so that when emptied the box is returned to the rack with the bottom up, which will avoid any unnecessary delay in search of the box containing the potassium salt, and show which of them are empty.

These thoughts, as I have jotted them down for the readers of the PHARMACIST, may seem trifles, but I can say that they have proved themselves of value to me, and I give them, hoping that they may benefit others who, like myself, may be but students and not teachers in the noble profession and art of pharmacy.

AN ADDITIONAL METHOD OF TESTING GLYCERIN.

BY DR. RICHARD GODEFFROY,

Professor of Practical Chemistry in the Vienna School ot Pharmacy.

As is known, pure glycerin should be free from color and smell, neutral, of specific gravity 1·26 to 1·27, capable of mixing with alcohol and water in all proportions, and free from all foreign substances.

The methods published for the examination of the purity of glycerin are somewhat tedious, for the glycerin must be tested not only with regard to its specific gravity, but also by means of all possible reagents for finding out of impurities which might be present. I believe that now I have found a method by means of which some of the testing operations are much simplified.

If pure glycerin be placed in an open platinum or porcelain crucible, and heated up to 150° Celcius, it will begin to boil. It can now be ignited, and will continue to burn quietly with a blue and not very luminous flame, without diffusing the least smell or leaving behind it the least residue.

When the glycerin has a specific gravity below that of pure glycerin, it will boil under 150° Celsius, but at the moment of boiling it cannot be ignited.

If metallic salts be mixed with the glycerin, they will remain as residue in the dish; the same would be the case when more highly organized combinations are present; these remain in the cup as a black, charred, or soot-like residue.

I may mention that glycerin can be ignited very easily by means of a cotton wick, and continues to burn without smell; on extinguishing the flame there is no smell. The ordinary commercial glycerin, of specific gravity 1·249 to 1·256, can easily be ignited by means of cotton. It is not necessary in this mode of ignition that the glycerin be anhydrous.—*London Phar. Journal.*

NEW METHOD OF PREPARING SALICYLIC ACID, AND ITS PHYSIOLOGICAL ACTION.*

BY PROFESSOR KOLBE.

Artificial oil of gaultheria, in which the percentage of salicylic methyl ether is very variable, is too costly for the preparation from it of any considerable quantity of salicylic acid. Professor Kolbe experimented, therefore, whether a method formerly described by Lautemann and himself, for the preparation of artificial salicylic acid ($C_7H_6O_3$) from carbolic acid by the joint action and carbonic anhydride and sodium, could be simplified and improved so as to allow of salicylic acid being obtained at a more reasonable cost. This object he has succeeded in attaining. After numerous experiments, Professor Kolbe finally adopted the following method: In a strong crude soda-liquor of known strength is dissolved a sufficiency of previously melted crystals of carbolic acid to saturate the caustic soda. The solution is then evaporated in an iron capsule, and by means of stirring brought to a dry powder. The sodium carbolate so obtained is gradually heated in a retort to a temperature of from 220° to 250° C. in a continuous current of dry carbonic anhydride. The reaction is ended when at the above mentioned temperature no more carbolic acid passes over. It might have been expected that, the reaction going forward in this manner, a molecule of carbonic anhydride would be introduced into the molecule of sodium carbolate, and thus a molecule of sodium salicylate be formed:

$$C_6H_5O\,Na + CO_2 = C_6H_5O\,COO\,Na.$$

This, however, is not the case, only half of the sodium carbolate being converted into salicylate. The reaction proceeds according to the following equation:

$$\begin{matrix} C_6H_5ONa \\ C_6H_5ONa \end{matrix} + CO_2 = C_6H_5ONa\,COO\,Na + C_6H_5OH.$$

In two molecules of sodium carbolate under the influence of carbonic anhydride an interchange of H and Na takes place, so that on the one hand carbolic acid and on the other side disodic carbolate result, which latter then combines with the carbonic anhydride to form disodic salicylate.

$$C_6H_5ONa + C_6H_5ONa = C_6H_4NaONa + C_6H_5OH$$
$$C_6H_4NaONa + CO_2 = C_6H_4ONa\,COO\,Na.$$

From this salt the salicylic acid is separated by means of hydrochloric acid.

The special physical and chemical properties of salicylic acid are well known, but its physiological action almost not at all. The knowledge that salicylic acid could be so easily prepared form carbolic acid and carbonic anhydride, and that it could be again decomposed by heat into the same bodies, led Professor Kolbe to think that, similarly to carbolic acid, salicylic acid might stop or entirely prevent fermentative and putrefactive processes, and operate generally as an antiseptic. This expectation has been confirmed. Mustard meal, which in a few minutes after being mixed with warm water gave off a strong smell of mustard oil, formed with water a scentless mixture when a little salicylic acid had been previously added. No fermentation was set up by yeast in a solution of grape sugar to which salicylic acid had been added; whilst in a sugar solution already in fermentation the action stopped after the addition of some salicylic acid. The preservative influence of this acid upon fresh meat is referred to on another page.

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* *Archiv der Pharmacie* [3], vol. v., p. 445, from the *Journal fur practische Chemie.*

The following, among other experiments, in their results illustrate the physiological action of salicylic acid:*

Solution of amygdalin mixed with emulsion of sweet almonds developed no smell of bitter almonds if some salicylic acid were added.

Beer, to which salicylic acid, in the proportion of 1 in 1000, was added, was thereby prevented from being spoiled by fungoid growth.

Fresh pure cow's milk mixed with 0·04 per cent. of salicylic acid, and allowed to stand in an open vessel at a temperature of 18° C., curdled thirty-six hours later than a similar quantity of milk standing by the side of it, but containing no salicylic acid. The milk remained of a good flavor, the small quantity of salicylic acid present not being perceptible to the palate.

Some fresh urine was divided into two portions and placed in separate vessels, after some salicylic acid had been added to one portion. The urine containing the acid was on the third day still clear and free from ammoniacal odor, whilst the other portion was far advanced in putrefaction.

Professor Thiersch has investigated the antiseptic action of this acid specially in relation to surgery. He has found that as a powder, either alone or mixed with starch, it destroys for a long time the fetid odor of cancerous surfaces or uncleansed wounds, without setting up any inflammatory symptoms. A solution of 1 part of salicylic acid and 3 parts of sodium phosphate in 50 parts of water, promotes the healing of granulating surfaces.—*London Pharm. Journal.*

EXTRACT OF GUARANA.

BY J. B. MOORE.

* * * I here present the formula I have adopted, which I offer for the benefit of my professional brethren, who may be thus enabled to make the preparation for themselves, and thereby be able to insure its reliability, for this is doubly important in a new remedy, which is still the subject of experiment by the medical profession, to determine its physiological action:

℞. Pulv. Paulliniæ,..............................℥xvi troy,
Alcohol. Fort.,
Aquæ,......................................āā q. s.

Mix three measures of stronger alcohol with one of water, moisten the powder with the menstruum and pack it in a glass funnel prepared for percolation, and gradually pour the menstruum upon it, until one pint of tincture is obtained. Set this aside, in a shallow vessel, to evaporate spontaneously to twelve fluid ounces; continue the percolation with the same menstruum until two pints more of the tincture are obtained, or until the powder is exhausted. Evaporate this by means of a water bath, at a temperature not exceeding 140°, to four fluid ounces. Mix this with the reserved tincture, and filter through paper.

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* *Dingler's Polytecnische Journal*, vol. ccxiii., p. 167.

This formula yields a perfectly reliable preparation. It is transparent, of a deep reddish-brown color (almost identical in appearance with the fluid extract of gentian), with a bitter, astringent, not unpleasant taste, leaving an after-taste on the palate strongly resembling that of coffee.

The menstruum employed in the above process is well calculated to thoroughly exhaust the drug of its virtues, and the proportion of spirit retained in the finished product holds in perfect solution all its soluble active matter. A sample of this fluid extract, made over three months ago, is still in excellent condition, showing no signs of change, and is entirely free from deposit.

In an emergency, a solid extract of guarana may be made by carefully concentrating the fluid extract, by means of a water bath, to the proper consistence. But, as this medicine is likely to be often prescribed in the form of pills, a definite formula and process for making a solid extract should be made known. I therefore, after some experiments with perfectly satisfactory results, offer the following process, which affords a most excellent solid extract of the drug, unimpaired by process of preparation, if the directions given for its manufacture be observed:

℞. Pulv. Paulliniæ,.... ....℥xvi troy,
Glycerinæ,...............................f℥ss,
Alcohol. Fort.,
Aquæ,....................................āā q. s.

Mix three measures of stronger alcohol with one of water, moisten the powder with the menstruum and pack it in a glass funnel prepared for percolation, and gradually pour the menstruum upon it, until one pint of tincture is obtained. Set this aside, in a shallow, open vessel, in a warm place. Continue the percolation with the same menstruum until two pints more of tincture are obtained, or until the drug is exhausted. Evaporate this by means of a water bath, at a temperature not exceeding 140°, to a syrupy consistence. To this add the reserved portion and the glycerin, and continue the evaporation, at a temperature not exceeding 120°, until the whole is reduced to the proper consistence.

During the concentration, in making this extract, the liquid should be stirred almost constantly, and especially is this necessary at the close of the process.

In the manufacture of all extracts, both solid and fluid, this important precaution of stirring during the evaporation should be observed, as it is by the neglect of this that the products, in such cases, are so often injured by heat. When it is observed, the concentration proceeds more rapidly and satisfactorily, and the medicinal virtues of the drug under treatment thus enjoy a comparative immunity from the injurious influences of heat.

In making fluid extracts, when reserved portions are to be concentrated to a given point, by either artificial or spontaneous evaporation, preparatory to receiving the product of the remainder of the percolate, it is very important to see that the concentration does not proceed too far.

The evaporation should be closely watched, and the moment it has reached the desired point the liquid should at once be transferred to a bottle and tightly corked, to await the product of the remainder of the process. The neglect of this apparently trifling point is often the cause of entire failure, or at least of great inconvenience, and not unfrequently leads to the production of imperfect and faulty preparations; as, owing to the uncertainty of the composition of the liquid after evaporation has once been permitted, its loss can not be supplied with any degree of accuracy, especially when it is a liquid of a compound nature, such, for instance, as alcohol.

Formulas are in this way some times blamed for imperfections, when it is the carelessness or inattention of the operator that is at fault.

Much care is also necessary in the concentration of the *last* portion of the percolate, in making fluid extracts. Where the liquid to be evaporated is a simple, as water, ether, chloroform, etc., the same care is not requisite to guard against excessive concentration, as the loss, in such cases, may be supplied by the addition of fresh portions of the respective liquids; nor is it so important even when alcohol is the liquid under treatment, if, in the operation, *all* of the alcohol is supposed to be expelled, because then water may be used to make up the loss; but if the spirit is to be only partially driven off, then care is absolutely necessary, for reasons just stated.

If the attempt be made, under such circumstances, to supply the waste occasioned by excessive evaporation, it may be the means of causing precipitation, or other untoward result, when this portion of the percolate is added to the reserved portion. It is the object of the suggestions offered in this paper to impress indelibly, if possible, upon the minds of all inexperienced pharmacists, the importance of these little points that are so essential to success in all pharmaceutical manipulations, yet which are so often overlooked, both by writers and teachers.

By the above process, I obtained from nine hundred and sixty grains of powdered guarana, three hundred and thirty grains of extract, of a good pill consistence, which is about one-third, or thirty-three per cent., of its weight.

In the United States Dispensatory, page 1670, edition 1870, guarana is directed to be given in substance, in the dose of from one to two drachms, while of the extract only from eight to ten grains are directed to be given, *during the day*, in pill form. Here seems to be a great and unaccountable disparity of dose between the extract and the powder. Either the dose of the powder is unnecessarily large or that of the extract is much too small. The dose in which the powder is directed, I have no doubt, is excessive. I should think that the proper dose of guarana, in substance, would be from fifteen to thirty grains.

Taking this as a basis, the dose of the fluid extract would be from fifteen minims to a half fluid drachm, or from about twenty-three to forty-five drops, as a fluid drachm was found to contain about ninety drops, as dropped from the lip of an ordinary six-ounce prescription bottle; while the dose of the solid extract would be from five to ten grains, to be repeated every two, three or four hours, or three or four times a day, according to circumstances.

As there seem to be no established data to be taken as a guide in its administration, the above, I should think, would be a safe approximation to the proper dose. Physicians, of course, can increase or diminish the dose as their experience and the indications seem to suggest or demand. In this way, after a while, the proper dose may be more accurately determined.

The fluid extract of guarana is most agreeably administered mixed with simple syrup or the syrup of orange, in the proportion of from fifteen to thirty drops to a dessert-spoonful of the vehicle.—*Extracted from the American Journal of Pharmacy for November,* 1874.

CHONDODENDRON OR CHOND*R*ODENDRON?

BY DANIEL HANBURY.

In the *Pharmaceutical Journal* for Nov. 14, it is remarked that the authors of the *Pharmacographia* prefer to write *Chondodendron,* and not as the derivation of the word would seem to require, *Chondrodendron.* The proposal to insert an r in the second syllable emanated from Mr. Miers, who, in his *Monograph of the Menispermaceæ,* states that the word was originally mis-spelt through an error in the press.

As this name, which is that of the genus to which the Pareira Brava plant has been shown to belong, may come into more frequent use than hitherto, it is well that we should know what reasons may be urged in favor of each way of spelling.

The genus made its first appearance in the work of the Spanish botanists Ruiz and Pavon, entitled *Floræ Peruvianæ et Chilensis Prodromus, sive novorum generum plantarum Peruvianarum et Chilensium descriptiones et icones,* published at Madrid in 1794. Here we find it *Chondodendron,* with the derivation explained thus—"*a granorum copia quibus arboris truncus et rami obsiti sunt.*" This is in allusion to the Greek word *χόνδρος,* signifying *a corn, grain, or any small roundish mass;* and is appropriate to the plant by reason of the little black warty spots that cover the bark, chiefly of the younger wood.

From such an origin, coupled with *δενδρον, a tree,* the word *Chondrodendron* would naturally result; but for some reason—as, I believe, for the sake of euphony—the authors of the genus chose to drop the first r, and to write *Chondodendron.* That this was by no typographical error is obvious. The word occurs again and again; and though there are enumerated several "*erratas de impression,*" *Chondodendron* is not among them. Four years after the *Prodromus,* the authors published their *Systema Vegetabilium Floræ Peruvianæ et Chilensis,* in which they still retained *Chondodendron:* in fact, the name has been almost universally accepted.

Thus De Candolle, in his *Systema,* published in 1818, as well as in the first volume of his *Prodromus,* which appeared in 1824, wrote *Chondoden-*

dron; and so the word is adopted by Poppig and Endlicher,* Lindley in his *Vegetable Kingdom* (1853), Eichler in the *Floræ Brasiliensis* of Martius, Bentham and Hooker† (1862), and, lastly, by Baillon in his *Histoire des Plantes*‡ (1871).

With the sanction of such an overwhelming amount of authority, I am satisfied to accept the name without any attempt at improvement. It has served for eighty years in botanical literature, and may fairly claim admittance to that of pharmacy.—*London Pharm. Journal.*

ADULTERATION OF BEESWAX.‖

BY ADOLPH W. MILLER, M. D., PH. D.

For a year or two past there has been offered in this market, and most probably elsewhere, an article termed "refined beeswax." It is unusually handsome in appearance and is generally represented as being strictly pure. It may be known by all of it being of a uniform bright-yellow color, entirely free from the sedimentary stratum of impurities ordinarily found in country wax. Its surface is clean and glossy, having no foreign particles adhering to it. On account of these apparent merits, it is usually sold at an advance on the price of the regular article. All of this so-called refined beeswax, so far met with, had been moulded into the shape of oblong blocks of uniform size, measuring about fourteen inches in length, eight in width and three in thickness, tapering slightly upwards, and weighing about eight pounds on an average.

The melting point of the refined wax was found to be 146° F., that of pure wax being 156° and that of paraffin from 137° to 140°. Its specific gravity is ·929, placing it again intermediate between beeswax, ·963, and paraffin, ·871. Being thus induced to suspect the presence of the latter body, 100 grains of the refined article were heated for fifteen or twenty minutes with one ounce of sulphuric acid to about 350° F.; several ounces of water were then added, and after cooling a sheet of paraffin weighing 80 grains was obtained, the loss representing the beeswax which had been carbonized by the acid. In order to verify the experiment, it was repeated with a composition of four parts paraffin to one of wax, when analogous results were obtained. 100 grains of pure paraffin, treated in the same manner, were recovered unchanged.

All the best text-books recommend fuming Nordhausen acid for this purpose, and state that an allowance must be made for a portion of paraffin charred by this acid. No one seems to have previously tried the ordinary commercial sulphuric acid, which was really found to be better adapted than the Nordhausen, as all the wax was carbonized and none of the paraffin affected.

The test is very readily applied, the only difficulty, and this a very trivial one, being the separation of the carbonaceous matter from the paraffin. It is most conveniently removed by repeatedly melting the paraffin on water, at the same time gently stirring it, so that the black particles can subside.

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* *Nova Genera ac Species Plantarum quas in Regno Chilensi, Peruviano, etc., legit. . . .* Lipsiæ, II. 1838.

† *Genera Plantarum,* I. 1862-68, index and p. 34.

‡ *Monographie des Menispermacees et des Berberidacees,* 1871. 36.

‖ Read at the Pharmaceutical Meeting of the Philadelphia College of Pharmacy, October 20.

There seems to be a considerable difference in the mode of contraction, while cooling, between beeswax and paraffin, and this may serve to detect the adulteration, at least when practiced to this extent. Blocks of paraffin are decidedly concave on the top, and the specimens of adulterated wax presented herewith will be observed to be more or less concave on top in proportion to the amount of paraffin which they contain. Pure beeswax appears to be level, and the contraction acting in a horizontal direction and tending rather to the production of vertical fissures.

The optical behavior is also different; pure wax is quiet opaque, while this adulterated article is somewhat translucent, more particularly on the edges.

Although no injury is likely to result from this admixture, it is an evident fraud, as there is considerable difference in the commercial value of the two substances. It may be asked, in this connection, whether it is not time for the Pharmacopœia Committee to turn their attention to paraffin, since we have thus again detected it forcing its way into pharmacy under the garb of beeswax, cosmolin and vaselin.—*American Jour. Pharmacy.*

SULPHOCARBOLATES.

BY GEORGE BRWONEN, F.C.S.

The sulphocarbolates having come pretty extensively into use, a notice of one lately examined and found peculiarly impure may be of interest, and prevent these salts from falling into unmerited disrepute.

The specimen was labeled "Sulphocarbolate of Soda;" it had a disagreeable odor, and a pink color.

It precipitated solutions of barium nitrate and chloride, and the precipitate from a hundred grains of the so-called "sulphocarbolate," after washing, etc., left an insoluble residue of barium sulphate, equivalent to 11·5 per cent. of crystallized sodium sulphate.

That carbolic acid (?) in a somewhat loose state of combination existed in this sample was proved by heating a strong solution of the salt and condensing the vapor in nitric acid; on diluting this acid, picric (carbazotic) acid was precipitated.

Other tarry compounds, fixed and volatile—probably of the phenyl or benzene series—formed the remainder of the impurities found in this sample.*

It seems probable that this salt must have been made by a careless operator from the formula given in the *Pharmaceutical Journal* for Jan., 1869, p. 429; and a few remarks on that formula may not be amiss, especially as the process requires some skill or care to be successful. Acids of known strength should be used and heated to the proper temperature to insure combination, avoiding, on the other hand, an excessive heat, which would decompose the acid into tarry matters and other compounds of the phenyl series. If the carbolic acid was pure and exactly sufficient to change the whole of the sulphuric acid used into sulphocarbolic acid, then any salt required might be prepared by neutralizing the acid with the special base.

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* We have met with specimens of sulphocarbolates of soda and potassa bearing the label of one of the most prominent of the German chemical manufacturers, which were in all particulars similar to the specimen described by the writer of the above paper.—EDITOR PHARMACIST.

If free sulphuric acid be found in the sulphocarbolic, it might be combined with an additional quantity of carbolic acid, or removed by the cautious addition of solution of barium hydrate as long as a precipitate of barium sulphate occurred—an excess of baryta should be avoided, as barium sulphocarbolate is soluble; this, however, would not matter much if an alkaline salt was required, for an alkaline carbonate would displace barium as the insoluble barium carbonate. Pure salts might also be obtained by decomposing barium or lead sulphocarbolates with sulphates, as noticed in previous journals.

Volatile, odorous and tarry compounds should be avoided or removed, their therapeutic value being unknown, and their presence in a definite salt objectionable.

Sulphocarbolates (at least the sodium salt) are pretty stable compounds; I do not think they are liable to spontaneous decomposition.

I admit that this is an exceptional case, possibly publicity will prevent its recurrence.—*London Pharm. Journal.*

SANDAL-WOOD.

The sandal-wood of commerce is the product of various trees belonging to the genus Santalum, and the species called Santalum album for a long time furnished the principal supply. Being a hard, closed-grained and ornamental wood, it is used for some descriptions of cabinet-work, and various carved ornamental and useful articles, such as writing-desks, work-boxes, card-cases, etc., are made of it. But its chief characteristic consists in the remarkable smell of the wood, which it owes to the presence of a peculiar volatile oil, extensively used by the natives of India as a perfume. This also has caused it to be largely used as incense to burn in the temples of China.

In course of time, sandal-wood was discovered to be abundant in some of the South Sea Islands, where it is the product of several species of Santalum, different from the long-known Indian one. There are about ten species of the genus, which are chiefly restricted to the East Indies, Australia and Oceanica.

The Indian species are Santalum album and S. myrtifolium. The former is a small tree, from twenty to twenty-five feet high, which is found on the border of Wynaad, in the Peninsula, and in Mysore. The exports of the wood from Madras are large—to Bombay, Bengal and the Persian Gulf. The tree grows in the islands of Sandal, Timor, Rotti, Savii, Sumba, Bali, and in the eastern part of Java, in the arid soil of the lower regions. The wood, which, in its color and texture, resembles boxwood, is much sought for, as an article of commerce, by the Chinese, who use the sawdust for making rings and pastiles for burning, as during combustion it exhales an agreeable odor. In Europe, sandal-wood is chiefly used for carving and turning. In the India Museum, Whitehall, various specimens of the ornamental application of sandal-wood in the East may be seen in boxes inlaid with ivory, a handsome carved sandal-wood table from Bombay, and other objects. The Australian species of sandal-wood are believed to be derived from Santalum lanceolatum, oblongatum, obtusifolium, ovatum and venosum. The tree is found in Queensland and Western Australia. At the London International Exhibition of 1862, a fine log of sandal-wood, weighing 4½ cwt., from Blackwood river, Western Australia, was shown; and another, three feet six inches long by eleven inches diameter, from York. The Australian sandal-wood is of an inferior quality, as regards odor. In 1849, as much as 1,204 tons of sandal-wood, valued at £10,711, were shipped from Western Australia. The merchants bought it for shipment at £6 to £6 10*s*. a ton. The sandal trees of any size, within a radius of 150 miles of Perth, have now been cut down, and little can be obtained.

It is probable that there are several distinct species of the tree in the South Sea Islands, which have yet to be botanically determined. The tree is not found on all the islands of the Pacific. Its headquarters would appear to be among those of the southwestern portion, including New Caledonia, the Loyalty Islands, New Hebrides, Espirito Santo, and some others. In the Fiji Islands, which have produced several thousand tons within the last thirty years, the tree has also become scarce. It is only the central portion of the tree which produces the scented yellow wood constituting the sandal-wood of commerce. The trunk and larger branches are cut into lengths of from three to six feet, and the whole of the bark and outer white wood are chipped off with the ax—an operation technically called "cleaning." Thus a log one foot in diameter is reduced to a billet only from four to six inches thick. The quality of the wood depends on the quantity of the oil contained in it, as indicated by the smell when freshly cut or burned. The old trees produce the best, and in them that part of the wood near the root is most prized. A handful of the shavings of the wood will prevent moths from attacking cloths of any description; and the same means may be used to keep away insects from specimens of natural history. Owing to a similar strong aromatic odor, furniture made of the fragrant timber of the bastard sandal-wood of Australia, Erimophila Mitchelii (Bentham), may be free from the attacks of insects. The wood is hard, of a brown color, nicely waved and beautifully grained. It will turn out handsome veneers for the cabinet-maker.

S. Austro-Caledonicum, of New Caledonia, furnishes a kind of sandal-wood superior to that of other countries, owing to the strength and fineness of its odor. It is to be regretted, however, that this tree is being ruthlessly destroyed in the island, as the wood is of such great use in perfumery. Scarcely any thing but the stumps and roots left from former trees can now be utilized. An essential oil, distilled in England and France from sandal-wood, is sold at £3 per pound. The powdered wood, for filling sachets and other uses, is sold at 1*s*. the pound. The Pacific species of sandal-wood are S. Ellipticum and S. Freycinetianum (Gaudichaud), which are met with in the Sandwich Islands. The latter species is found in the high mountainous ranges of Tahiti; but the wood is of inferior quality, as it is not odoriferous, or only becomes so with age.

The wood of Myoporum tenuifolium (Foster) is sometimes used as a substitute for sandal-wood. The fragrance of the fresh wood is very pleasant, but it loses its odor after being kept some time.—*The American Garden.*

HOSTETTER'S BITTERS.

Hostetter's Bitters took their origin thus: Hostetter is a Greek, who came to America a long time ago, and if he is alive yet he must be quite old. He served as a bar-tender some time at Natchez, Miss., and made a drink which was very palatable to his customers, and they would visit his bar and call for his bitters. Lawyers and merchants and planters from the adjacent country would call for them, and after a time some of the wealthy men got him to put up bitters for them by the gallon or demijohn, which they took home and used for a common drink. The bar-keepers on the famous steam packets had such frequent calls for Hostetter's Bitters that they had to call on him to supply them with the drink in kegs full. These evidences of their popularity induced him to go fully and regularly into the business, and his name soon became notable. He had an establishment a while in New Orleans, and soon found men with money to aid him, when he opened a large house in Pittsburg, Penn., where he still supplies his bitters in immense quantities. Of late years, I observe he styles himself DOCTOR in his advertisements, but I never have learned what medical college conferred the degree on him.

It is needless to say his bitters, for which he claims such great medical virtues, are made of ordinary cheap whisky, with a little bitter decoction and essence of orange-peel. He and his partner, Smith, if he is a real personage, have made quite a fortune out of the bitters, and could retire from the business and have enough to live on.—*Southern Medical Record.*

A CHEAP AND ACCURATE THERMOMETER.

A. Jaksch, of Kreibitz, in Bohemia, has devised a convenient form of air thermometer, in which the liquid employed is glycerin. The air thermometer has long been known and regarded as more accurate than any other form of thermometer, as air, like other gases, expands equally for equal increments of temperature. When water is employed in the air thermometer, it cannot be employed for low temperatures; with glycerin this disadvantage is overcome, while glycerin does not evaporate so readily as alcohol.

The glycerin thermometer is thus described by Jaksch: An ounce bottle is two-thirds filled with glycerin of any desired color, and the bottle placed in a freezing mixture of sal ammoniac, saltpetre and water, so as to cool the liquid to 32° F. A glass tube, twelve to fifteen inches long, is passed through a good-fitting cork, so as to dip nearly an inch into the glycerin. The cork is inserted in the neck of the bottle and rendered air tight with sealing wax, or a cement of varnish and chalk, and the thermometer is then ready to be graduated. On inserting the cork, the liquid rises in the tube a few inches.

The bottle is placed in melting ice, and the level of the liquid marked 32°, if the scale is to be Fahrenheit's. It is next placed in warm water, say at 132°, and this point marked. The space between these points is divided into one hundred equal parts, and this division carried down to the Fahrenheit zero, and upward to the top of the tube. This method of graduation is necessary, as the thermometer cannot be exposed to the temperature of boiling water like other thermometers. This thermometer is exceedingly delicate and accurate, but cannot be employed for high temperatures, owing to the great length of the tube that would be required. It can be so easily and cheaply constructed that every family can afford to have one in each room, as well as in cellars, stables, gardens, conservatories and other places where it is desirable to know or regulate the temperature.—*Journal of Applied Chemistry.*

LAC.

There is certainly no more curiously interesting article of Indian export than lac, whether in the form of a beautiful dye or in that of a resinous staple. It may be defined as a secretion elaborated by a busy little insect called the *Coccus lacca*, the derivation of the latter word evidently coming from the Sanscrit *laksha*, signifying 100,000, and owing its origin to the fact of so great a multitude of tiny workers being engaged in manipulating the secretions which issue from punctures made in the twigs of certain smooth-barked trees, such as the peepul, kossum, byar, banyan and prass.

Among the Hindoos lac is of immemorial renown, and is to be found throughout India, Siam, Burmah and Assam; that produced in Siam fetching the highest price in the home market. After "swarming," the insects attach themselves to a young green branch, and from its sap, modified by their own action and properties, a resinous coating is formed and divided into minute chambers, which eventually become a cradle for baby *Coccus lacca*, a tomb for the parent, and the stick-lac of commerce. The bodies of the insects possess the dye, with which also the whole inside of the coating is impregnated. As the eggs are hatched, the young laborers work their way through the walls of the cells and appear in myriads, so that the site of operations appears to be covered with living vermilion. There are five descriptions of the article—stick-lac, seed-lac, lump-lac, shell-lac and button-lac. The first is the exudation *pur et simple*, and resembles dirty coral; of this a single tree usually yields from thirty to forty pounds. Seed-lac is the same, but in a granulated form and deprived of the coloring matter. To accomplish the separation it is necessary that the wood be carefully divided from the lac, an operation performed by passing a roller rapidly over the twigs, when the coating comes off. The resinous residue is then freed of all impurities, slightly bruised, washed in cold water, and finally steeped in hot to kill the original manufacturers. The colored fluid is now strained off, and the granulated particles are dried. Lump-lac is seed-lac in a consolidated form, and is produced by constant kneading. To obtain shell-lac, seed-lac is strained through coarse cotton bags placed near charcoal fires to admit of the contents melting. The resin comes out in the form of thin flakes, which is shell-lac, while the rougher portion, from its similarity to that article, receives the term "button."

The dye is obtained during the process of preparing seed-lac, and is precipitated from an alkaline lixivium by the agency of alum. The coloring matter is then vatted, filtered on tables, and pressed in boxes like indigo, appearing in the market in small thin cakes.

In India, lac, in whatever form, is used for many purposes — for trinkets, such as earrings, necklaces, bracelets, and numberless other ornaments which find ready purchasers in the bazaars; in the manufacture of ink, and as a basis of sealing-wax. The beautiful specimens of lacquerware, from Scinde, which took a prize at the Exhibition of 1851, owed their beauty to lac; and in Burmah it is also used by jewelers for coloring gold, and as a cement wherewith to bind metal-work. Large quantities are produced in the Shan States, and it is the desire of Government to introduce regular lac preserves into British Burmah. The insects are removed from one tree to another, and even long distances, with the greatest ease.—*Chemist and Druggist.*

VARNISH.

The use of varnish has been known from the earliest historic times. Among the nations of the East, especially in China and Japan, the art of varnishing was at a very early date brought to great perfection. It was also understood by the Egyptians, and the preservation of pictures at Herculaneum and Pompeii, in their original freshness and brightness of colors, was due to their having been covered by a kind of wax-varnish. In modern times, the more general use of expensive furniture, and the increase in the practice of finishing and decorating the interior of dwellings with hard woods, has greatly enlarged the annual consumption, so that the amount of its production in the United States alone is to the value of more than four millions of dollars, and there are at least a hundred establishments engaged in its manufacture. In order to meet the special demands of different branches of industry, varnish is made in much greater variety than was the case in ancient times, while the modern spirit of inquiry, aided by the rapidly developed science of chemistry, has brought forward numerous materials, not formerly used for this purpose, but very suitable for it.

Varnish is, in almost every case, made by the solution of some resinous substance in a liquid, which will evaporate in the open air, leaving a thin film of the resin deposited on the surface to which the varnish is applied, and covering it with an even coating. A characteristic of a good varnish is that it will remain brilliant after the evaporation of the solvent, and present a dry, hard surface, rather than a soft, greasy, tarnished one. It should also adhere very closely to the surface to which it is applied, so as not to be liable, even after a long time, to scale off. It should also become as hard as possible without becoming brittle. The chief solvents used are linseed oil, oil of turpentine, and alcohol. The resins are vegetable substances, and exude from trees. Their chemical constituents are oxygen, hydrogen and carbon, and they are supposed to be formed by the oxygenation of essential oils. Those used in making varnish are copal, amber, mastic, sandarac, lac, elemi, dammar, benzoin, anime and caoutchouc. Gamboge, dragon's blood, aloes and saffron are used as coloring matters. Copal is obtained from Mexico, India and Africa. The trees which yield it are the *Rhus copalinum*, of Mexico, and the *Eloeocarpus copalifer*, of India. In Guinea lumps of it are gathered, by the natives, from the sands on the coast. Another fossil variety, called Highgate resin, is found in the blue clay near London, and on the walls of a trap-dyke at an old lead mine in Northumberland. This last deposit is in flattened drops. Fossil copal is also found in the East Indies.

Amber is also a fossilized gum, which was furnished by the trees of some former geological epoch. Beds of it are found on the coast of Prussia, near the Baltic Sea, and its collection affords to the Prussian Government an annual revenue of about twenty thousand dollars, giving employment to a large number of persons. The collection is made after a storm, when the swell of the waves is moderate. The men wade out and gather in nets the seaweed which is washed up by the storm, and in which are found pieces of amber of different sizes. In mining for it, the amber-bearing beds are some times found as thick as two and a half feet. The largest known piece of amber is in the royal cabinet at Berlin, and weighs eighteen pounds. The value of the pieces is not entirely in proportion to their size, but according to their quality, transparency, clearness, etc.

Mastic is a gum furnished by a shrub growing on the upper shores of the Mediterranean Sea, and known botanically as the *Pistacia lentiscus.* The supply is from the island of Chios.

Sandarac is the product of the *Thuja articulata,* a small coniferous tree growing in the north of Africa.

Lac is a resin which exudes from the twigs and branches of various trees, in the East Indies, when bitten by an insect called *coccus lacca,* which swarms upon such trees as have a milky juice. When the crude gum is broken from the branches, and is sold with the twigs, without being subjected to any preparation, it is called stick-lac. When stick-lac is broken up and partially treated with water, it is known as seed-lac. When melted and allowed to cool in masses, it is called lump-lac. When melted and strained through cloths and allowed to harden in thin sheets or flakes, it is called shell-lac or shellac. The best supplies are obtained from Siam, and those next in quality from Assam.

Elemi is a resin which is obtained from a variety of trees in different parts of the world. That which comes from Holland is supposed to be produced from the *Canarium balsamiferum,* of the Dutch possessions in Ceylon. Other varieties of this gum come from Manilla, from the Philippine Islands, from Brazil and Mexico. This resin is afforded to commerce in a great variety of shapes, colors and degrees of consistency, and but little is known as yet, accurately, concerning its production on the trees from which it is obtained.

Dammar, or damar, is a resin which exudes from various trees in the East India Islands. In China and Bengal it is used for coating the bottoms of boats, and similar purposes.

Benzoin is a fragrant resin produced by the *Styrax benzoin,* and is peculiar to Bencoolen, Batak and Palembang, in Sumatra, and Brunai, in Borneo. This tree is cultivated for its yield of benzoin.

Anime, a resin which comes from South America, is supposed to be the product of the *Hymenæa courbaril,* a tree native to that continent. This gum is odorous and soft, and its name is said to be derived from the number of insects which it generally contains, and which, having been attracted to it, have become imbedded it it. The *anime* of commerce, however, and that principally used, both in Europe and America, is a variety of copal, the hardest and most expensive in the market, coming from Benguela, on the coast of Africa.

The gum Kauri, of New Zealand, is known in commerce as one of the copal gums, of which it is the softest and cheapest. It is a product of the *Pinus kauri,* and partakes much of a resinous character.—*Chemist and Druggist.*

FRAUDULENT MUSK.

A case of some interest to pharmacists was tried at the Court of Exchequer, at Westminster.

Mr. Jeune, who is a broker, sought to recover from Mr. Monjoseph, who is a drug merchant, the price of a caddy of musk weighing 19½ oz., and valued at £32 13*s*.

The evidence went to show that plaintiff offered defendant a caddy of *fine Tonquin musk;* the latter did not at once purchase, but offered it to export druggists of Liverpool, who replied that they could do with it if of fine quality; the defendant wrote plaintiff to this effect, and with his permission sent the caddy to his customers on approval, with a request that the pods should not be cut open or disfigured unless they were purchasers.

One of the firm made an examination of the pods, pricking with a needle in the usual way, and looking for stitches; they had, as a whole, the appearance of being genuine, and it was ultimately decided to purchase, accepting them, according to declaration, as fine Tonquin musk. About ten or eleven days after the pods were all cut open, and of the 19½ oz. only 6½ oz. were found to be musk, the remainder being earthy matter, etc. The pods were returned to defendant, who in turn offered them back to plaintiff, but he refused to take them, and brought this action to recover amount. On his behalf it was argued that it was the custom in the musk market to examine by pricking only, and not by cutting, and that the purchaser always took upon himself the responsibility of the contents, it being understood that musk was largely adulterated.

For the defense it was argued that the article was specified and declared to be something which it afterwards proved not to be; fine musk had been purchased, but had not been supplied. Dr. Symes, in his evidence, said that he looked for stitches, but so ingeniously were they sewn that he failed to detect such till after cutting them open.

The judge, in summing up, said that in all probability the fraud had been committed in China, and it would be for the jury to say which of them was to suffer the loss. The evidence had narrowed itself into two points, and from these they should arrive at their decision. There was such a thing as buying an article from appearances, without any declaration being made as to its nature; in that case, as soon as the seller had handed over the article his part of the contract was complete. The plaintiff had, however, admitted having offered the contents of this caddy as fine Tonquin musk, and in so doing had contracted to supply the article named. The second point was one on which the law was very exact—viz., if the purchaser of an article keeps it for an undue length of time before he notifies to the seller that the article is not what it was declared to be at the time of purchase, then the responsibility rests with the purchaser, and he has no power to recover for any loss he may sustain.—*The Medical Press and Circular.*

TRANSACTIONS OF PHARMACAL COLLEGES AND SOCIETIES.

THE CHICAGO COLLEGE OF PHARMACY.

The December meeting of the Board of Trustees of the Chicago College of Pharmacy was held in the College rooms on Tuesday, the 29th. After the transaction of some routine business, the reports of the Secretary and Treasurer of the Publishing Committee were read, showing the journal to be in excellent financial condition, and fulfilling its mission as an auxiliary to the College, in the cause of education. Mr. W. F. Blocki was elected a member of the publishing committee, *vice* Sargent, whose term of service had expired. Mr. Whitfield then offered his resignation as Treasurer of the Publishing Committee, which was very reluctantly accepted. Mr. T. H. Patterson was elected for the remainder of Mr. Whitfield's term, which is one year.

Mr. Ebert handed in his resignation as editor of the PHARMACIST, upon which no action was taken:

CHICAGO, December 29th, 1874.

To the Board of Trustees of the Chicago College of Pharmacy:

In May, 1873, on the resignation of Mr. N. Gray Bartlett as editor of the PHARMACIST, and as no one could be found to fill his place, owing to the embarrassed condition of the journal, I agreed to again perform the duties of editor until such time as a suitable person could be secured—the service to be wholly gratuitous on my part—with the promise that a successor was to be found as soon as possible to relieve me. The publishing committee has thus far failed to secure an editor, and the service already performed by me would seem sufficient to warrant me in requesting that I be relieved at as early a date as shall be consistent with the prosperity of the journal, as the performance of this duty necessarily interferes with my individual business.

I remain very respectfully,

ALBERT E. EBERT,

Editor of the Pharmacist.

Mr. M. W. Borland was elected a member of the finance committee, in place of Mr. H. W. Fuller, resigned.

On motion, a vote of thanks was tendered the retiring members of the Publishing Committee for their efficient services, they having faithfully served through the years of trial which the PHARMACIST has passed through, and now retire with the satisfaction of seeing their efforts rewarded in the prosperity of the journal.

On motion of Mr. Ebert, a vote of thanks was tendered Prof. Attfield for additional supplies of apparatus for the College, just received, and which were purchased with the remainder of the funds subscribed by the Pharmacists of Great Britain, for the relief of the Chicago College of Pharmacy, after the great fire.

On motion of Prof. Trimble, a vote of thanks was tendered Messrs. Allaire, Woodward & Co., of Peoria, Fuller & Fuller, Gale & Blocki and Murray, Biddle & Nickell, of Chicago, for specimens of *materia medica*.

J. J. SIDDALL, *Secretary*.

ST. CLAIR PHARMACEUTICAL ASSOCIATION OF SOUTHERN ILLINOIS.

GENERAL MEETING.

The general meeting of this body was held Tuesday, Dec. 8, at 7½ o'clock, P. M. The President being absent, Mr. H. Steingoetter was called to the chair, and called the meeting to order. The minutes of the last meeting were read and approved. The committee on auditing of books reported favorably on the condition of the books kept by the Secretary and Treasurer.

The Secretary's and Treasurer's annual reports were then read, accepted, and thanks tendered by the Association for the faithful discharge of their respective duties.

On motion of Mr. Streit, the Association resolved to adopt, for the present, the code of pharmacal ethics as published in the proceedings of the American Pharmaceutical Association in 1852.

The following gentlemen were duly elected officers for 1875: President, Mr. H. Steingoetter; Vice-President, Mr. Wm. Feickert; Secretary, Mr. A. G. F. Streit; Treasurer, Mr. A. Rudolph.

Mr. Streit reported that a pharmacal law was to be introduced in the State Legislature, which the Chicago College of Pharmacy is now amending. He also stated that he considered it to be the duty of the Association to participate with the College of Pharmacy in the amendation of this law, and that a union of the two pharmacal bodies of this State in this matter could only exercise a beneficent influence, and would, to a great extent, secure the passage of a good State pharmacal law.

A committee on pharmacal legislation was subsequently appointed by the chair, and invested with full power to correspond with the Chicago College of Pharmacy, for the purpose to effect a union in this matter.

The following were appointed members of this committee: Messrs. N. T. Baker, president of committee; Wm. Feickert, A. Rudolph, A. G. F. Streit, secretary of committee.

No further business being on hand to transact, the Association adjourned.

A. G. F. STREIT, *Ph., Sec'y.*

THE MUTUAL RELATIONS EXISTING BETWEEN PHYSICIANS AND DRUGGISTS. REPORT OF THE CHAIRMAN OF THE COMMITTEE APPOINTED BY THE ST. LOUIS MEDICAL SOCIETY.

Gentlemen:

The relations existing between druggists and practicing physicians are necessarily and unavoidably very intimate and intricate, and the mutual confidence existing between the two professions should be encouraged and increased by every honorable means.

The relations of both to the public are more momentous and serious than most people seem to understand or appreciate; for the health and life of every individual in the community is more or less at the mercy of the doctor and the pharmacist; and yet, in the vast majority of cases, individuals care nothing for their physicians and druggists, except the use they can make of them. Education, acquirements, refinement and honesty exert but little influence in advancing the pecuniary interests of either profession; for the humbug and hyprocrite in our profession, like the ignoramus and swindler in the drug business, is often much more likely to grow rich through his rascality and deception than the thoroughly educated and honest man is through his endeavors to do what is right. The palaces of the patent medicine men throughout the country, and the positions that ignorant and unqualified pretenders occupy in almost every community, verify my statement. The one accomplishes his purposes by bold and unblushing lies—in the form of advertisements scattered broadcast throughout the length and breadth of the land; the other, either by adopting the same plan, which we term quackery, or by getting himself foisted upon the community as a professor, when he does not know the alphabet of his profession. The one is an independent, outspoken, defiant species of humbuggery; the other, a joint-stock, mutual-admiration and underhanded mode of deluding and deceiving the public. Both are wrong, and the one should be discountenanced as much as the other. No man should be allowed to dispense drugs unless he has previously proven himself competent by a rigid examination before a board of practical pharmacists (not professors of pharmacy).

Nor should any physician be allowed to style himself professor, or to be so styled by his mutual friends, unless he has proven himself possessed of profound knowledge, and peculiar fitness for imparting knowledge to others.

By such radical changes only can we expect to purge either profession of their abuses, or to elevate their members to the high and honorable position which they should hold as co-laborers and workers in the cause of sick and suffering humanity.

And these reforms can only be accomplished through wise and judicious legislation. The experience of the past, in our own profession, ought to convince the most determined opponents to legislation, that without it we can accomplish nothing, literally nothing, towards bettering our condition.

The equalizing spirit of the present age, originating in the unrestricted freedom of thought, word and action, inherent in every free government, whilst it has accomplished much good in every sphere of life, has likewise done much harm to our profession, by removing all legal protection from it. For centuries, only a few schools were granted the privilege of graduating doctors, and none but such graduates were allowed to practice the art. Under this system our profession flourished, and was respected as a privileged class, and the people willingly acquiesced in the arrangement. The title of M. D. was respected and honored in every community, even though its possessor had but moderate attainments.

Such was the condition of our profession in the early part of the present century. The leading medical men of that period were recognized not only as being eminent in their art, but as leaders and benefactors in the communities where they resided. The names of Hosack, of Francis, of Valentine Mott, of Rush, of Physick, of Dewees, of Warren Stone, of Nathan R. Stone, and a host of others equally eminent in their day, were household words, and will be transmitted to coming generations long after the leading surgeons and physicians of the present day (though far more skilled and accomplished than their predecessors) have been forgotten. The multiplication of medical schools has so cheapened the price of diplomas, that persons who are little better than idiots may become legally qualified to practice medicine, and the public do not seem to appreciate the fact that the unrestrained practice of our art by pretenders and quacks and legalized ignoramuses and scoundrels, is not only a source of danger and death in every community, but that it is an infamous outrage upon the refined, educated and honorable members of our profession; that class of men who have done more to advance science and the pursuit of knowledge for the bettering of the condition of their fellow men, than all others put together.

The diploma, or certificate of proficiency, which confers upon us such sacred privileges, and imposes upon us such momentous responsibilities, should be something more than a mere warrant to kill or cure, and should not be available to ignorant, immoral or dishonest men. We who have it in our power to exert so much influence upon human life and health, should be, and are, held to a more strict responsibility than those who follow trades and professions which have no particular bearing upon the well-being and safety of the public. It is demanded of every artisan that he shall use ordinary care and skill in his calling, but it is exacted and expected that we should use extraordinary caution and judgment in the practicing of our profession.

So, too, with the apothecary, who, as the agent or assistant of the physician, proclaims himself to the world as a compounder of medicines, and not as a mere dealer in drugs, certain scientific attainments and requirements are demanded as a safeguard to the public. He should not only know what the various drugs are, and their qualities, (and how they are to be used,) but how to select, prepare and combine these according to the physician's direction.

Most persons, being entirely ignorant of the effects of medicine and the qualities of drugs, trust entirely to the superior knowledge of the physician and the dispensing druggist. Both claiming such scientific acquirements, legally assume similar responsibilities, and thereby make themselves liable for any damage caused by their ignorance or carelessness. Both, in a great measure, depend upon each other for safety and success, and, consequently, should work harmoniously together, and carefully guard each other's rights, privileges and reputation in every honorable way. The dispensing pharmacist should remember that in the compounding of every prescription he assumes a double responsibility, one to the patient and one to the physician; and the physician should remember that in writing every prescription he should do so with care, and a just appreciation of the double responsibility that he is assuming, first to the patient and next to the apothecary. No medical man should ever give an incorrect or illegible prescription to a patient, and no druggist should ever dare to compound one which he does not fully understand.

Right of Property in Prescriptions.—A prescription is nothing more nor less than a written order or direction from the physician to the apothecary to furnish or compound certain medicines for the patient, to be used by him according to the written or verbal directions given him at the time. It is undoubtedly the property of the author, and neither the patient nor the apothecary acquires any right to make use of it, except for the case and purpose specified. It is merely a safe and convenient mode of communicating instructions from the physician to the druggist.

Formerly it was the general custom for the physician to dispense the drugs himself, and no prescriptions were needed. But at the present day, in most cities and towns, the druggist prepares and furnishes the medicine. "This arrangement is beneficial to both professions, as well as to the public, and from it arise certain implied contracts. When a physician sends a prescription to an apothecary to be compounded, there exists between them a tacit understanding or agreement that such prescription, when it is original with the practitioner sending it, shall not be made public. In such case it would neither be honorable nor honest for the druggist to deprive the author of the benefit of it by dispensing it indiscriminately. The originator is the only person who would have the right to do so, if he choose to exercise it. But the apothecary certainly does not obtain the same privilege by gaining a knowledge of the ingredients and proportions which he acquires in compounding the prescription."

The prescription is only a single order given the patient upon the druggist, for use at that time, unless otherwise directed by the physician, and if the patient have it repeated without further advice, he does so at his own risk; still, we can not prevent him from using a copy of said prescription as long as he chooses. Universal custom and legal decisions have sanctioned this right. The druggist who refills a prescription without an order from the doctor, thereby assumes all responsibility for accidents that may accrue therefrom. He has really no equitable right to use the prescription in any manner without an order from the physician. Professor Ordronaux says, "But although, as has been already shown, the party paying for the prescription has an undoubted property in the paper, and a right to the *personal use* of the formula, it is clear that he acquires thereby no absolute property in the latter. That he may use it personally as often as he pleases can not be doubted, for the use is precisely what he has purchased and paid for, but he has no right to give it to others."

The prescription, then, continues the property of the author, and the apothecary has no claim to it whatever, except as a record. The custom, however, of renewing prescriptions without consulting the physician, has grown to be so common that it will be difficult to correct it; but by concert of action between physicians and druggists we may check the growing evil, and in a great measure do away with it. It has originated mainly from the desire of the patient to avoid the expense of consulting us a second time; but we, too, are very much to blame for it. Many medical men keep no record of their prescriptions, and when patients return to them, stating that the medicine which was ordered for them has acted so well that they wish to get it repeated, the doctor, not remembering the formula, directs him to do so. Others are actually too lazy to write a new prescription, and direct them to have it renewed. This practice has become so much abused, that unless we get our whole fee in advance, or direct the druggist not to repeat the prescription, we never again see the patient, who continues repeating the medicine until he is cured, and concludes that we have been well paid for our advice by a single fee. Agreement among druggists not to refill prescriptions, except upon a written order from the physician, would relieve them of all responsibility in case of a mistake or accident; would save them much trouble in hunting up old prescriptions, and if the custom was general, would rather increase than diminish their business, whilst it would restore to us much that legitimately belongs to our profession. Liberality is one of the cardinal virtues of our profession, but it will hardly be expected that we should throw away our knowledge.

The Practice of Apothecaries Prescribing.—The majority of the regular profession, in all large cities, have relinquished the right to compound, dispense and sell drugs, and having voluntarily assigned that portion of their business to the apothecary, very naturally expect that the druggist, unless he be also a regular physician, will not assume the functions of the medical practitioner, although the statutes of some of the States do not prevent him from so doing. We know how great the temptation may be in many cases, not only from policy but for profit, for him to undertake the healing of the sick, or the recommending of patent medicines, of the composition of which he knows nothing. But he should remember that, from the nature of his business, the public looks upon him as being competent, in some cases, to give medical advice, and that if he does so, he thereby assumes all responsibility for mistakes made, and is rendered liable to a certain degree for damages. He does not occupy the same irresponsible position as one who is known to be entirely unskilled in medicine. No apothecary is either compelled or expected, in any case, to assume the functions of the physician, and we have a right to demand that he should not do so, for, in very many instances, he not only directly robs us, but through his ignorance brings our profession into contempt. He must remember that pharmacy constitutes both an art and a science within itself, and is sufficient to occupy his attention, without his encroaching upon the field of practical medicine, and that when he assumes to do that which he knows he is incompetent to perform, and thereby kills a human being, he will be held liable as a criminal, and might be convicted of voluntary manslaughter.

Mutual Responsibility of the Druggist and Physician.—As stated above, no physician is excusable, much less justifiable, in scratching off an incorrect or illegible prescription; but his ignorance or negligence will not acquit the apothecary of blame for attempting to compound any prescription that he does not thoroughly understand. For though he innocently mistook the language of the prescription, yet if the exercise of reasonable care would have warned him that he was preparing something which would inevitably kill, it would be criminal in him to go on. He acts as the physician's agent, and should use reasonable care to protect both his patron and the patient, and he must remember that he is engaged in a very serious business, and that what might be considered ordinary care where human life was not at stake, might be construed as culpable negligence on his part. Apothecaries, so far as the performance of their legitimate duties is concerned, must be placed upon a similar footing of responsibility with physicians and surgeons.

Negligence consists in omitting to do something that a reasonable man would do, or the doing of something that a reasonable man would not do; in either case causing, unintentionally, mischief to a third party. Negligence of one man does not excuse that of another.

"Under the doctrine of joint liability, the apothecary who compounds, knowingly or not, a noxious prescription, commits a joint tort with the physician who utters it. Nor is there an escape for either party by showing a want of wrong intention, provided the prescription was noxious *ab initio.*"

"Neither mistakes nor accidents will be held as a justifiable excuse from civil responsibility in a physician or pharmacist. And although the physician and pharmacist undoubtedly carry on a legal business, yet death resulting from negligence in discharging it is undoubtedly manslaughter."

Such are some of the ideas that have presented themselves to your committee in considering the mutual relations which exist between physicians and pharmacists, and in order to carry into effect the resolutions which we now offer, should the Society deem them worthy of notice, we recommend the appointment of a committee of three from this Society to confer and act jointly with a committee of four from the Pharmaceutical Society, in preparing and presenting to the next legislature of Missouri a suitable act for the regulation of the practice of pharmacy and sale of poisons in the city of St. Louis and State of Missouri.

Resolved, That any beneficial reform in medicine or pharmacy can only be accomplished by rational and uniform legislation throughout the Union, and that where human life and health are at stake, it is the bounden duty of all civilized communities to recognize the fact by appropriate legislative enactments.

Resolved, That we hail with satisfaction and approbation the legislative recognition already extended to medicine and pharmacy in several of our States, and recommend that wise legislation be urged upon every commonwealth, in order to provide for the public safety, and to protect the rights of all parties.

Resolved, That thirty years' experience in elevating the standard of medicine, by the multiplication of schools and the cheapening of diplomas, has proved a signal failure, and that we discountenance and discourage a similar suicidal and degrading system, which is being inaugurated for pharmacy by unscrupulous and ambitious aspirants, who, for the sake of personal gain and notoriety, are willing to sacrifice both their professions and their friends.

Resolved, That as pharmacy is a hand-maid to practical medicine, and pharmaceutists depend in a great measure upon the respect, confidence and patronage of physicians, we claim that no apothecary has a right to advertise, recommend and act as agent for a secret nostrum, whether it be the composition or exclusive property of himself or others, for by so doing he makes himself a party to the fraud practiced upon an ignorant and confiding public, and thereby forfeits all claim to recognition from respectable and honorable practitioners, for such practice implies either disgraceful ignorance or fraudulent avarice.

Resolved, That, as members of this Society, we are opposed to the dangerous practice of patients and druggists renewing a prescription, without consulting its author to ascertain whether such medicine should be continued or not, for it is well known that many medicines have a cumulative effect, and thereby become dangerous and destructive.

Resolved, That we will favor legislation that will prohibit the dangerous practice of apothecaries renewing prescriptions without the authority of the physician, and that until such legislation be effected we earnestly request all pharmacists to restrain from repeating prescriptions, as far as they can, without a written order or indorsement from the physician, and ask them to destroy all prescriptions after retaining them in their possession for thirty days.

Resolved, That although, as a common vendor of drugs, the apothecary can sell his goods to any adult without restriction, still, as such license is likely to compromise individual and public safety, we think that statutory restrictions should limit or prevent the sale of poisons at retail, to the filling of prescriptions duly and plainly signed by responsible practicing physicians, and that ordinances controlling this matter should be enforced in all cities and towns where the general State law does not cover it.

Resolved, That as the physician, as the originator of the prescription and in the composition of the formula, acquires a literary property, belonging to him as its author, he has the right to sell the use of the same to a patient for his own benefit, without thereby invalidating his claim to his original ownership, and that the apothecary, by compounding the same, acquires no legal property claim in it, except as a matter of record to justify himself in compounding the same, and his right in the prescription is simply that of a custodian, whilst that of the patient pertains only to the individual use of the prescription.—*St. Louis Medical and Surgical Journal.*

EDITORIAL.

The following appeared in reply to an article published in the August PHARMACIST, "Illustrations of the Literature of Quackery," and requires answer, as we believe the editor of the *Pacific Medical and Surgical Journal* is honest in his view of the case; and because improvement is only possible in honest minds when the *truth* is seen. We welcome the words of a man, as a medical editor, who is not afraid to have the truth appear, and who is evidently willing to help apply the lash of honest criticism to the renegades of either profession.

"Neither as editors of the *Pacific Medical and Surgical Journal* nor personally are we amenable to these strictures. And though not inclined to justify the practices referred to, we feel inclined to say that they are instigated altogether by pharmacists, that pharmacists are responsible for them, and that pharmacists should reform themselves before they undertake to reform those whom they have led into temptation. In regard to purchased puffs of medicinal preparations, whether secret or not, we have no word of defense to offer. In this respect we leave our journalistic cotemporaries who are guilty of this practice to the tender mercies of the Chicago PHARMACIST. But when it comes to the advertising of preparations which are issued by respectable pharmacists, not as nostrums or secret medicines, but as compounds of well-known elements, claiming only some peculiar merit of combination or manipulation, the editors of medical journals may be held excusable if they confide in the truth and honor of the pharmacists, and aid them in giving currency to their preparations. At this moment almost every dealer in drugs in America is galvanizing his brain to devise some new or superior preparations with which to identify his name and fortunes; and the practice is sanctioned or connived at by representative men of the guild, if not by their societies and colleges and journals. Now, let the pharmacists take this matter in hand and adopt and enforce some code of ethics; or at least let them investigate and expose the shams and impostures which are virtually indorsed by their official bodies. And when they shall have done this, and when, after such exposure, medical journals and practitioners shall lend or hire themselves to sustain the quackery and imposture of the drug trade, then we shall say to the Chicago PHARMACIST—'Lay on Macduff,' etc."

We allude to the above comments, especially, for the purpose of correcting what seems to us an error, in attributing all the responsibility for the large *use* of illicit or secret compounds by physicians to the adroit arts of the apothecary. We would remind our friends of the medical profession that there would be small profit in manufacturing these nostrums were it not for the patronage of physicians, and without the stimulus of profits the production would soon cease. As the case really stands, the production of the compounds we specially condemn is confined to about *ten* houses or firms, of whom not to exceed *four* are or have been pharmacists, which, considering the large number of pharmacists in the United States, is an infinitesimal proportion of the whole. The same showing might be made in regard to the successful "patent medicines" so largely sold, many of which were originated by broken-down physicians, or so-called doctors, and *but few* by respectable pharmacists. It is well known that a profitable demand has existed for what are termed "elegant preparations," as a sort of counterpoise to the tasteless "elegance" of homeopathy. This demand has been created and fostered by a majority of physicians throughout the country, and a consistent result is seen in the alacrity with which preparations of unknown composition and of doubtful character have been accepted and largely used by the profession. Even *psuedo* chemicals, if only *palatable*, were more satisfactory than the legitimate, leading to the absurdity of "sweet quinine" and of elixirs of quinia and strychnia, having no disagreeable *bitter* taste.

If our worthy cotemporary will make a distinction—which it is apparent should be made—between the "practices referred to" and the honest efforts of real pharmacists, he will correct his statement that "the practices referred to" "are instigated altogether by pharmacists," and must admit that the "temptation" is chiefly from the other side. The *temptation* arises from the full and free indorsement of quackery by well-meaning physicians and mediocre medical journals, leading the pharmacist to conclude that his only road to fame and wealth is by the path so well used by those who have been successful in their efforts to hoodwink the physicians, and foist upon them a class of preparations which has been not only an insult to their intelligence, but a fraud upon their patients.

The medical and the pharmaceutical journals have it in their power to correct many of the abuses afflicting each body, arising in part from deficient education of its members, and in part from a lazy willingness to be supplied with "ready-made clothing" by any quick-witted manufacturer who is able to convince them that the road of medical progress lies directly through *his* "laboratory" and *into* his pocket. One reason for attaching *less* blame to the manufacturer is, that he finds a ready market for his wares; and his sole aim being to convert his knowledge into cash, the temptation is very great to supply the demand. No code of ethics stands in his way, for he rarely is counted among those who labor to maintain colleges of pharmacy. We wish, here, to make a broad distinction between the honest pharmacist, who really tries to improve the character of preparations without secrecy of formula or composition, and the class of men before referred to, who endeavor to disguise their formulas by a thin statement of inferential constituents, or by bold empiricism. The first named are performing a duty of the greatest importance to the medical profession, and should be sustained by every well-informed physician; the latter class may be justly likened to "the head of the camel," that sooner or later will take full possession of the tent, leaving its medical owner powerless on the sands of a desert of quackery.

It will be seen that we make no war upon the laudable enterprise of skillful pharmacists, who make and advertise preparations of real merit and of known composition. The man who investigates and makes known a better method for the production of pepsin, or any other remedial agent, deserves immortality of reputation, and a pecuniary compensation of no mean quality, which should be secured to him by law. He is a benefactor of his race, and so is each other one who strives by "galvanizing his brain to devise some new or superior preparation," for, be it noted, *this* definition does not apply to the horde of secret compounds which depend wholly upon their secrecy and adroit advertising for their undeserved success. The latter *class* of preparations is not indorsed by pharmaceutical bodies, even tacitly. Shall we continue to say with truth that they *are* indorsed by the patronage of physicians and the influence of medical journals?

THE CHICAGO BOTANIC GARDENS.

We are happy to be able to announce to our readers the inauguration, in Chicago, of an enterprise, which when fairly in progress, will furnish an additional source of interest and pleasure to our citizens, prove an attraction to visitors from abroad, and supply a want long felt by scientific men and students in the Northwest.

The Board of South Park Commissioners have determined upon the establishment of Botanic Gardens, and have entrusted the general management and direction to the following committee, citizens of Chicago and Hyde Park: H. N. Hibbard, John R. Walsh, E. H. Sargent, H. H. Babcock and Albert E. Ebert. These gentlemen have accepted the appointment, and organized by the election of Mr. H. N. Hibbard, President, and H. H. Babcock, Secretary and Botanical Director.

The South Parks comprise about 1,200 acres, and the Commissioners will reserve for the gardens all the space that may be required for present and prospective use, in such locality as the board of managers may select as most suitable for the purpose.

The managers will at once decide the location and proceed to mature a plan for the gardens, upon a broad and comprehensive basis, commensurate with the importance of the subject and the desires of the Commissioners. The latter have expressed the wish that these shall be made to surpass, in general attractiveness and scientific importance, all similar establishments in this country, and have promised their most liberal support and co-operation.

The contemplated plan includes the formation of—

1st. The Botanic Garden proper, in which all indigenous plants of the United States, and hardy species from other parts of the world, will be arranged, as far as possible, according to their natural affinities, while hot-houses and green-houses will be provided for the reception and display of tropical plants.

2d. An Arboretum, or collection of hardy trees from all parts of the world, planted in such order as to serve the purposes of science and ornament.

3d. A garden devoted to general Floriculture, with special reference to furnishing material for beautifying the parks and boulevards.

4th. A Botanical Museum, for the exhibition of vegetable economic products, which will serve to illustrate, in connection with the living plants cultivated in the gardens, the sources and various applications of substances derived from the vegetable kingdom.

5th. An Herbarium, or collection of specimens of dried plants, scientifically arranged; and

6th. A Library of Botanical Works; the last two being considered indispensable adjuncts to the gardens, since they furnish the only means for correctly naming the plants under cultivation, and for maintaining the establishment upon a scientific and practical basis.

The full development of this plan, above sketched, will be the work of years, but the board of managers are mindful of the fact that the people of Chicago, in particular, are ever impatient of delay, and as early as practicable will make arrangements for the proper care of material already promised. They fully expect that the result of the first season's work will be such as to attract the attention of strangers and enlist the active co-operation of our citizens, in particular the members of the medical and pharmaceutical professions, in making these gardens, eventually, an honor to our city and the country.

In obtaining the services of Prof. H. H. Babcock, as Botanical Director, the board was fortunate, and the wisdom of the choice will be apparent at an early day. Perhaps no other gentleman in the community could have been selected, combining as fully the qualifications requisite to success in an enterprise demanding rare scientific attainments with good administrative ability. He is assured of the active co-operation of each member of the board of managers in this work, and we heartily commend the project to our friends everywhere, who are interested in the progress of education and in furnishing means for acquiring it.

REVIEWS AND BOOK NOTICES.

Memoir of Professor William Procter, Jr., late Professor of Pharmacy in the Philadelphia College of Pharmacy. Read before a meeting of the College, September 28th, 1874. 28 pp. Philadelphia. Reprinted from the *American Journal of Pharmacy* for November.

We have read and re-read this biographical sketch of our late teacher and friend, and we feel more keenly than ever the great loss the profession of Pharmacy has sustained in the too early demise of this great and good man. The memoirist has done his duty well; he has done justice to the memory of the departed, without overdoing it by way of laudation, which is a very common failing in biographical notices. We were honored by a long and intimate acquaintance with Prof. Procter, and will say that we never met with the same worth of character embodied in any one individual. The general opinion entertained by those who casually met him, was, that he was very reticent. This was true to some extent, until one became more intimately acquainted, when he would lay aside his reserved manner, and in a quiet way, enjoying a good laugh whenever a proper time presented itself; and he was not averse to making a joke on favorable occasions. We had the pleasure of being in the company of Prof. Procter during our travels in Europe. While visiting the old city of St. *Gall*, Switzerland, for the purpose of making some inquiry regarding the family of his old preceptor, ZOLLICKOFFER, the following incident occured: Our party consisted of four persons, and as the writer was the only one conversant with the German language, Prof. Procter requested him to make the necessary inquiry of a gentleman, who was passing at the time, as to a certain direction which we needed. The gentleman kindly walked with us some distance, pointing out the exact location of the house which we sought. For this kindness we expressed with much emphasis the German "*Danke*"—THANKS. As soon as our obliging guide had gotten out of hearing distance, Prof. Procter turned upon us with a very stern expression, saying sufficiently loud, so that the remainder of the party could hear him, "Well, I declare, I certainly thought that you possessed the politeness of a gentleman." We, much astonished, asked, "In what respects, Professor?" He, very soberly eyeing us, said, "I consider it any thing but polite to treat a person as you have the gentleman who so kindly went out of his way to show us the direction we were in search of, and for this you called him a "*donkey.*" We at once tried to set him right, by informing him that we had used the proper German mode of expressing our thanks, and that the word "*Danke*" signified THANKS, and had not any allusion whatever to that much-abused quadruped, the donkey. With a twinkle in his eye, he expressed his astonishment at the peculiarities of the vernacular of the fatherland. We hope his memoir may be generally read and his sterling qualities emulated by the members of our profession.

An Address, delivered before the McDowell Medical Society of Kentucky, at its semi-annual meeting, in Madisonville, Ky., Nov. 4, 1874, by Wm. T. Briggs, M. D., of Nashville, Tenn.

Transactions of the Medical Society of the District of Columbia. October, 1874. Washington, D. C.

THE PHARMIC–SUPREME OF MANHATTAN.

ANONYMOUS.

Did great Homer employ,
In describing old Troy,
A muse to sing songs of its heroes?
Why should we refuse
To summon a muse
To glorify pharmacal zeroes?

The theme of to-day,
The papers all say
With the zeal of the orthodox Patton,
Is the great height attained,
And the high repute gained
By the Pharmic-Supreme of Manhattan.

O Muse! now rehearse,
Though it call down a curse,
The song which the world is now singing,
And re-echo the sound
Till the whole earth resound
And deafen the throng with its ringing.

The din, to begin,
'Twill be well to put in,
By way of a trite introduction,
Where this Great Centre lies
Which its compeers defies,
By a process of modern seduction.

Great Manhattan Centre
Lies where Nature rent her
Mainland in ragged projections,
Then trimmed off the edges
With green banks and ledges
And beauty-enshrouded deflections.

It seems, while at school,
It was said to a fool,
"Take this conical cap and put that on,"
And from that day to this
The wise saying there is,
"He's a fool—but he has a Man's hat on."

But it seems that the chap,
In spite of his cap,
Grew up to gigantic proportions,
And, just like a fool,
Had no ethical rule
But lived by inventing Extortions.

The place got its name,
The Fool rose to fame,
And the food there which people grew fat on,
Was exactly the food
To do the most good
To the Pharmic-Supreme of Manhattan.

This Pharmic-Supreme
Is no vision or dream,
But a tangible, breathing Existence;
So with chop-sticks and claws,
And good stomach and maws,
He must struggle for mundane subsistence.

He was hardly a fool
Like the men of his school,
But had risen a peg or two higher;
And the struggle he made,
Till his enterprise paid,
Made him pass through an ordeal of fire.

An instance or two,
As to notice he grew,
May be worth while in this place to mention.
Though, to tell the whole tale,
Our powers would fail,
And it certainly 's not our intention.

But how he at last,
In time that is past,
Developed his famous commixture,
Is known to old men,
For in the mart then,
Commercially, it was a fixture.

While now, to be sure,
To hear of it more,
One must go to the mouldy Saints Rest;
The *Elixir Strychnine*
And the *Vinum Quinine*
Then doubtless was reckoned the Best.

When he was quite poor,
Fatigued and foot-sore,
And his floor it had merely a mat on,
His Elixir did sell—
It really did well—
For the Pharmic-Supreme of Manhattan.

But 'lack, 'lack a day !
Though at first it did pay,
And the prospect was day by day bright'ning,
The people did whine,
For the *mixture Strychnine*
Did kill like a streak of chain-lightning !

And now comes the time
When I pause in my rhyme,
I so sad a thing never attempted ;
But I 've got a good Muse,
And she 'll never refuse
Till her coffers are quite dry and emptied.

Did he weep ? Yes, he did.
Had he pluck ? Who 's afraid !
The Fool gave his head a good scratching :
" I 'll consult the Old Nick ;
He 's a friend ! He 's a brick !
His deviltry 's said to be catching."

" Be honest who can,
He 's no doubt a good man :
I 'll be honest—but *intermix shrewdness ;*
Perhaps I by dint
Of a puff through the Print,
May be thought to be brimful of goodness."

" Ten dollars a line
(Humph ! that 's very fine !)
May run counter the rules of good breeding,
But to one who 's a Fool,
And was dubbed so at school,
Can he think of ought else but good feeding ?"

So he went hard to work,
Not a moment did shirk,
And soon dressed up in fine silk and satin ;
That very night he
Went out on a spree,
This Pharmic-Supreme of Manhattan.

First beer and then wine,
From the banks of the Rhine,
Schnapps and Bourbon, till fast he fell sleeping.
He awoke in the morn ;
His companions were gone,
But he yet was in very good keeping.

While he slept—what a dream !
It really did seem
He 'd be rich now in spite of the Devil !
So there, in high glee,
('Twas induced by the spree),
He soared high above pharmacal level.

This vision was his—
A prescription like this :
" *Sweet marjoram, blue pill and aloes* "
Would arrive at his stand,
And in turn he would hand
It to twenty wise pharmacal fellows.

'Twould be read by the first,
The second would burst
The stopper from out the right vial ;
The third he would think,
The fourth was to wink
And submit the new pill to a trial.

The fifth he should smell,
And if all was well
He should pass to the sixth in due order ;
The seventh should taste,
The eighth prevent waste
By re-closing the vial with solder.

The ninth take a dose,
And if from repose
He is 'wakened in twenty-four hours,
He reports it next day,
And receives extra pay
For the test of his purgative powers.

The tenth, and so on,
Till the twentieth come,
Puts the drugs to the test of precision ;
Then the medicine they
To the " boss " shall display,
To procure his final decision.

" This kind of a store
Will my good name restore,
And I 'll flourish the pharmacal baton,
Thus I 'll be what I crave,
Ere I pass to my grave,
The Pharmic-Supreme of Manhattan."

" On account of delay,
It is quite true there may
Many deaths ensue during the meantime ;
And yet, as a rule,
It appears to the Fool,
It is better than killing by strychnine."

Just then he awoke ;
He thought he would choke
From the fumes of the drinks of the nation ;
To his dire surprise,
On his *dorsum* he lies,
Shut up in Fifth Avenue Station.

(When the *Vinum* had failed,
And th' *Elixir* impaled
On the trident of Public Opinion,
What more could he do
Than to push the thing through
And to struggle for future dominion ?)

But this spree, that was all
That produced the great fall
From the highest throne man ever sat on ;
And yet to this day
He believes people pray
For the Pharmic-Supreme of Manhattan.

And the theme of to-day,
As the papers all say,
With the zeal of the orthodox Patton,
Is the great height attained,
And the high repute gained
By the Pharmic-Supreme of Manhattan.

Does this doggerel seem
To be only a dream,
And destitute wholly of meaning ?
To discover the seed
It is true it may need
A deal of good threshing and screening ;

But let one and all,
Let both great and small,
Confess that no man ever sat on
A throne quite so grand
As the throne at the stand
Of the Pharmic-Supreme of Manhattan.

THE PHARMACIST.

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ADDITIONAL NOTES ON EXTRACTUM CHINÆ FRIGIDE PARATUM.

BY EUGENE C. KAUFFMANN.

In the September number (1874) of THE PHARMACIST, a formula is given for preparing this watery extract of cinchona, which is a great improvement on that furnished us as the "officinal process," by the *Pharmacopœia Germanica,* although it may not be safe to improve upon officinal processes, as there is the same objection to a remedy being too strong as that of being too weak; yet, in this particular preparation, such an objection can not be raised, as the object of the process can only be to obtain as large a yield of the extractive matter contained in the bark, as the menstruum, "cold water," will extract from it. In working with the process, as advocated by Mr. Baur, I have noticed that a slight modification of his directions would produce a still larger per cent. of extract, when working with a sample of the same bark operated upon by him in his published experiments. The modifications consist of the following:

First—That the addition of glycerin (one ounce to every sixteen ounces of the bark employed) be made at once to the watery percolate when obtained, and not, as suggested by Mr. Baur, after the same had been evaporated to one-fourth of its bulk. This addition of the glycerin previous to applying heat will prevent the formation of the apotheme, which he directs to be removed by straining, when the percolate has been reduced by evaporation to one-fourth of its former bulk.

Second—That the evaporation be conducted, under no circumstances, over a direct fire; but that the same be, in all cases and at all periods during the evaporation of the preparation, subjected to no other heat than that of a water bath.

When Mr. Baur's process is thus modified, the yield of extract will be an extra five per cent., which will make it thirty per cent.; and it will reduce the cost of the extract to about twenty cents an ounce.

NOTE ON LINIMENTUM SAPONIS.

BY CHAS. HEYLMANN.

Much annoyance is annually experienced by the apothecary whose habitation does not lie directly under the sun's rays at the equator, by the instability of the officinal soap liniment. As soon as the cold season sets in, the fluidity of this preparation is invariably changed to that of a semi-solid, due to the fact that part of the soap employed is thrown out of solution by the fall in temperature, presenting an unsightly pharmaceutical preparation. This will always remain so, as long as the pharmacopœia directs that an olive oil soap be dissolved in a menstruum composed of 32 parts of alcohol and 6 parts of water.

The Pharmacopœia Germanica has partially overcome the difficulty of solidification by directing the employment of dilute alcohol, but it is very questionable whether or not this strength of spirit in the preparation does not modify its medicinal value as a liniment. There is no doubt but that a strong alcoholic menstruum is a more efficient rubefacient than a weaker strength, therefore such a reduction in the strength of the spirit is not advisable on this account. Much has been said regarding the purity of castile soap, and this has been often quoted as the cause of the difficulty regarding the preparation. Be this as it may, it matters little whether the quality of the soap be a pure olive oil soap or not, as neither will be soluble in the menstruum as directed by the U. S. Pharmacopœia whenever the temperature falls below that of 60° Fahr.

Therefore it becomes us to seek a remedy, not in the solvent, but in the soap. This subject presented itself in this light to me some twenty years ago, when I began to look about for a soap which had not the objectionable feature of insolubility possessed by olive oil soap. After much experimentation with different vegetable oils, I at last came upon castor oil, which presented itself by the fact of its ready solubility in stronger alcohol. A soap was accordingly prepared from this oil, by saponifying it with caustic soda, one part of caustic soda being dissolved in four parts of water and about five parts of castor oil, this being sufficient to fully neutralize the sharpness of the alkali. The soap thus formed answered the purpose most admirably, and from that time to this I have never employed any other soap in preparing either the *spiritus, or linimentum saponis*. I have during these many years fully tested the preparations thus made, and have not observed the least sign of congealing or even getting turbid at —20° Fahr., thereby recommending itself for use in the coldest climates. A soap prepared from almond oil retains its fluidity until the temperature has fallen to 27° Fahr., when it begins to congeal. A soap made from this oil may also be objectionable on account of its high cost.

Within a few years the use of castor oil soap has been suggested by Chas. H. Clark and by L. E. Sayre, who have called the attention of the profession through the medium of the pharmaceutical journals, to the use of this body for the preparing of the officinal spirit and liniment of soap. I have, by experience, found that the following process for making the soap is much better than that at first employed: It consists in first forming a potash soap, by heating a solution of caustic potash (one part potash dissolved in six parts of water) with five parts of oil, stirring until a perfectly transparent, ***not milky***, solution is formed; to this is now added a saturated solution of chloride of sodium, whereby the soap is changed from a potash to that of a soda soap. Stirring is to be continued until the mixture has begun to cool, then allow to subside for a day and decant off the supernatant solution of the chloride of potassium, and the surplus of the uncombined alkali from the finished hard soap, which can be cut into pieces of a suitable size and laid aside to dry.

The quantity of chloride of sodium necessary for the decomposition of the potash soap is about five parts of chloride of sodium to every four parts of caustic potash used in making the potash soap.

CHICAGO, January, 1875.

NOTES ON FLUID EXTRACTS.

BY CHAS. B. ALLAIRE.

There is one point in the manufacture of this class of preparations, that has never been noticed in any of the articles published in the journals, and one that seems to be important in many cases.

The Pharmacopœia directs that for each sixteen fluid ounces of the finished extract, the first fourteen ounces of the percolate shall be set aside, and the remaining portion evaporated to two fluid ounces, and added to the first portion, and filtered if necessary.

The objection to this plan, for some fluid extracts, is this: The last portion of two fluid ounces is necessarily of very low proof, containing probably not more than three to five per cent. of alcohol; this, when added to the first portion, reduces the proof of the whole preparation, and is very likely to throw some of the soluble matter out of solution, especially if the preparation is a saturated solution—which is the case in many instances—or contains any resinous or oily principle.

This last addition reduces the proof of the finished preparation about five per cent. below what it would be if the proof was maintained in the last two ounces the same as in the first fourteen.

This seems to be a sufficient difference to account for much of the sediment that is almost always found in fluid extracts that truly contain sixteen troy ounces of drug in each pint.

Our plan for overcoming this objection has been as follows: We reserve the first thirteen ounces; then, in evaporating the balance of the percolate, we reserve one and one-half ounces of the first alcohol that comes over; the evaporation is continued till only one and one-half ounces are left in the still, which is added to the reserved portion of the distillate, and the whole three ounces added to the reserved portion of the percolate. The advantages gained by this plan will be readily seen. The first portion of the distillate will necessarily be of very high proof, and will also contain a large portion of the volatile principle, if there be any, which would otherwise be lost; and, also, the proof of the last three ounces is kept nearly the same as in the first thirteen ounces, so that when the two solutions are mixed, the proof is not reduced—at least not more, probably, than the fraction of one per cent.

The above remarks apply only to that class of fluid extracts made with dilute alcohol.

Perhaps, in this connection, a few words in regard to sediment in fluid extracts may not be out of place. We have on our list over two hundred and eighty fluid extracts, and have had calls for about fifty more. Some of the crude material from which these are made contains over fifty per cent. of matter soluble in the proper menstruum, while others do not contain five per cent. It necessarily follows that some fluid extracts will be very thick, in fact, super-saturated, while others will be very thin and look weak. Very little fault is ever found with the thin and clear preparations, because the trade is used to them; but to those which are very dense, or become gelatinous when exposed to very cold weather, there is much objection made; and the appearance of the preparation, which should be taken as an evidence of the faithful exhaustion of the full amount of drug, is really considered an objection. Sediments and precipitates, if soluble, are valuable, and should not be condemned by the consumer. If insoluble, either by raising the temperature before dispensing (which can be the only proper way), or by the addition of more menstruum (as a test only), the precipitate is probably inert, and no loss would be sustained if taken out by filtration; or, it may be the result of some decomposition, that may have been caused by too strong a light, or some other cause, not always the fault of the manufacturer.

PEORIA, ILL., January, 1875.

HOMEOPATHY *VERSUS* ALLOPATHY.

TO THE EDITOR OF THE PHARMACIST:

The medical schools of this country are becoming so numerous, and occupy so important a position, both in relation to the community and to the allied schools of pharmacy, that a few words of criticism may answer a purpose.

It is assumed that a medical college should rank with other schools of the higher or scientific class. If this be true, it would follow that their graduates should compare favorably with those of the other learned professions, in general education, and in having a specific knowledge of the technical branches of study taught therein, even if we omit reference to that higher order of intelligence needful to successfully combat the insidious progress of disease, which certainly calls for superior attainments. It has been said that "like begets like," and this may be true in the animal and vegetable kingdoms; but is it so in the kingdom of mind—that invisible yet potent influence that rules the world? It can scarcely be maintained, even if asserted, and we look in vain for the psychological begettings that should follow the oracular wisdom of the numerous teachers of medical science at the present day. Are the teachers at fault, or is there something wrong in a system which has grown with our growth, and seemingly been strengthened by our weakness? We think the system is on a wrong basis, and the foundation being defective, the structure is not sound.

It is not the writer's intention to defend or to attack Homeopathy; nor will he institute a comparison as to the merits of pellet *vs.* bolus; but the title of this article furnishes a convenient text with which to illustrate a weakness of the teaching in our medical schools—one that has been prolific in its effects to increase the popularity of Homeopathy, in contrast with the older (and therefore regular) practice of medicine.

Without reference, therefore, to the question as to which method of treatment is nearest or truest to the present knowledge of diseases and their cure—for this question does not lack able champions on either side, and when the truth does appear, it may be found, as it often is, between the two extremes—we will endeavor to show that the success of Homeopathic physicians is at least partly owing to the errors of our regular medical schools. Let us inquire what previous teaching, training, or fitness is looked for or required in students who apply for instruction; who come to learn, from competent teachers, the most profound and the most technical knowledge which it is possible to teach—facts, scientific theories, deductions, and the application of all these to the treatment of those secret maladies which may well puzzle the wisest of their teachers? Do these students come from other schools, colleges, and universities, where the mind is trained and educated in the subtleties of human knowledge, fully prepared to understand the scientific and technical instruction to be given them? Alas! no. The farm furnishes its quota; the forge and the mechanic's bench their full share, and more. A large majority entering the medical school, come with no fit preparation for their studies; and the result is precisely what might be expected. After two or three winters spent in hearing lectures which they can not fully understand, a limited number of hours in the dissecting room, as many more in listening to clinical instruction in some hospital, and the summer spent in labor, to purchase further instruction, the student is finally called up for examination; when, by dint of cramming and the aid of leading questions, he is enabled to answer a certain proportion of the queries, and therefore becomes a *Doctor*—providing his thesis has been deciphered without inducing insanity in his teachers. Armed with diploma, such a man (fortunately there are numerous exceptions) goes forth, with scalpel in hand and the regular remedies in his pocket, to make fame, if not reputation for his *Alma Mater*. What wonder is it that, after a test of his skill, the community shun him, each one preferring to die a natural death; or, when sickness comes, sending for the nearest homeopath, with tasteless solutions and sugar pellets, in which no poison lurks. If the latter saves no life, he destroys none with medicine; and if to die, the patient dies in peace.

We claim the picture is not overdrawn, as relating to hundreds of medical students graduated each year from the many colleges in our country. There is another class, fortunately, who come prepared to understand and learn what is taught them, and who become, in time, the bright ornaments of their noble profession. We claim that medical colleges and teachers are pursuing the very course to bring the title of "*Medicinæ Doctor*" into disrepute, and to destroy that feeling of reverence which people formerly exhibited towards the family physician. It is no doubt true that we have too many medical schools, and that a spirit of rivalry is excited to increase the number of students. Far better would it be if the schools were supported by the State, and the requirements for admission fixed at so high a standard that only those capable of learning could be received, and only those be graduated who should prove, before an impartial and competent board, that they are fitted for the responsible duties of prescribing for the sick. Until our medical teachers shall adopt some standard of fitness for pupils, excluding those who are not prepared by previous study to make a good use of the instruction given them, this evil will continue. No literary school of the higher grades will admit a scholar without examination; why should the noble profession of the physician be the only one disgraced by illiterate yet "regular" graduates? In proportion to the number of these incompetent graduates may be estimated the further increase of quackery and of medical empiricism.

Homeopathy, with whatever faults it may have, and however serious its errors—viewed from our stand-point—is yet to be heartily desired and commended, as opposed to the ignorant and reckless use of the potent medicines now in the hands of unskillful but legalized Doctors. "For fools rush in where angels fear to tread." Truth will finally triumph, but may be (is) forced to pass through the valley of humiliation, before its defenders will see the right way to exalt its banners and proclaim its victory.

It is fully time for those who have the best interests of the profession at heart, to use their influence to correct this mammoth evil—an evil to themselves of no small magnitude, but infinitely greater to the public, which has a just claim upon the medical profession for an honest and manly discharge of its duty. REFORMER.

CHEMISTRY OF THE TAR ANTISEPTICS.*

BY W. E. BICKERDIKE, F. C. S.

The subject which I propose to bring before you this evening is rather imperfectly described in the title of my paper. The tar antiseptics possess a very high degree, perhaps their highest degree, of interest and importance, in respect to those properties which render them so serviceable in a sanitary point, not only for the general purposes of disinfection for which they are extensively employed, but also for their application in the antiseptic method of treating surgical cases, which may be said to owe its origin to the employment of these bodies. An account of the tar

* Read before the Liverpool Chemists' Association, December 17, 1874.

antiseptics would be very imperfect if these characteristics were not included, and I propose briefly to refer to them, although they scarcely belong to the chemistry of the subject.

The tar antiseptics, I need hardly say, are derived from tar, and they form by no means the least interesting or useful group of compounds furnished by that prolific material. Gas tar, as is known, is a highly complex mixture; it consists of a great number of liquid and solid bodies, some of which have been very imperfectly studied.

It is probable that several of the constituents of tar possess more or less the characters of antiseptics, but this property is especially characteristic of the alcohols phenol and the isomeric cresols, commonly known as carbolic and cresylic acids. Possibly higher homologues of these compounds may exist, having similar properties; at the present time, however, these two bodies (which are really alcohols, and not acids,) are by far the most important antiseptics contained in tar, and there can be no doubt that the ancient reputation of tar as an antiseptic was very largely owing to the presence therein of these so-called acids. By the term tar antiseptics, then, I refer especially to carbolic and cresylic acids, or, more correctly, phenol and cresol, these being the only bodies which are separated from coal tar, on the commercial scale, with a view to their employment as antiseptics.

In tracing the history of these products, it is necessary to refer briefly to the treatment of tar by which its constituents are separated from one another. The first process consists of simple distillation, by which the volatile portion is removed from the non-volatile. In this process, of course, the bodies with lowest boiling points first pass off, and as the temperature rises the higher products are driven over. When the volume is reduced to about one-half, the tar has lost all its volatile constituents, and the residue is incapable of yielding further products, except by destructive distillation.

In the annexed diagram a list is given of the constituents of coal tar, together with the boiling point of each compound. The list will no doubt become greatly extended by further research.

CONSTITUENTS OF GAS TAR.

NAME.	Boiling Point (Centigrade.)	NAME.	Boiling Point (Centigrade.)
Hydrosulphuric Acid		Anilin	182
Ammonia		Phenol	184
Benzene	81	Parvoline	188
Water	100	Paracresol	200
Toluene	111	Naphthalene	212
Pyridine	115	Rubidine	230
Pyrrol	133	Leucoline	235
Picoline	135	Viridine	251
Xylene	139	Cryptidine	256
Cumene	148	Anthracene	350
Lutidine	154	Pyrene	
Collidine	170	Chrysene	
Cymene	171	Pitch	

On the first distillation of the tar, these products are, as you might expect, very much mixed together; in fact, we may compare the result to a spectrum in which the colors overlap one another, and in this second diagram I have represented both the order in which the results present themselves and, approximatively, the degree in which they are intermingled.

Light Oil.

Naphthalene.
Cumene, Phenol, Leucoline.
Pyrrol, Cymene, Rubidine, Cryptidine.
Toluene, Pyridine, Anilin, Naphthalene, Anthracene.
Benzene, Xylene, Cumene, Phenol, Cresol, Naphthalene, Chrysene.
Water, Toluene, Lutidine, Anilin, Leucoline, Pyrene.
Naphthalene, Cymene, Phenol, Viridine.
Collidine, Cresol.
Naphthalene.

The left-hand member (Benzene) represents the commencement of the distillation, and the right hand member (Chrysene) the termination. By drawing a vertical line through the diagram, at any point, it will pass through the names of those substances which distil together. Naphthalene appears at almost every stage of the process, notwithstanding its boiling point is 212° C.

In the practical working of the operation, this distillate is not all run into one receiving vessel, but it is collected in three or more separate portions. The first receiver is used so long as the liquor coming from the still is lighter than water. When the specific gravity reaches 1000 to 1010 the contents of the first receiver are set aside as "light oil;" the distillation is then continued in the second receptacle until the oil begins to contain anthracene, when the vessel is again changed and the remainder of the distillate collected in the third receiver. These three portions are afterwards treated by special methods, in order to separate any particular constituent that may be required. The first portion, or "light oil," contains the phenol and part of the cresol oil, and it is to this portion that we shall now confine our attention. In order to separate the phenol and cresol, the light oil is agitated for some hours with a solution of caustic soda, and, after being allowed to stand for some time, the soda solution is removed by decantation. This solution contains both the phenol and cresol dissolved, and on neutralizing the soda these rise to the surface, in the form of a dark oily liquid, consisting of phenol and cresol, together with some sulphur compounds, water, and a quantity of pitchy matter. The further separation of the phenol and cresol from this crude liquid is effected by repeated fractional distillation, assisted by crystallization of the phenol, from which the liquid cresol can be removed mechanically. When the process of purification has been carried as far as the present commercial methods will allow, we have the two bodies in the form of the samples before you. The solid phenol is of the quality commonly used for medical purposes. It is almost, but not entirely, free from cresol; but this is not important, as the latter is quite as effective an antiseptic as the former. The cresol contains a much larger proportion of phenol, amounting often to 15 or 20 per cent.; this mixture of cresol and phenol is commonly known in commerce as liquid carbolic acid; it is used almost solely for purposes of disinfection. Pure phenol is generally described in text books as crystallizing in long needles, which fuse at 35° C. and boil at 186° C.; the crystals are also stated to be very deliquescent, and but sparingly soluble in water when melted. This description is not a very accurate one, being, in fact, a description of an impure body. Pure phenol fuses at 41° to 42° C., and boils at 184°; the crystals are not deliquescent. Water dissolves 5 per cent. of phenol at 16° C., but at 100° it will dissolve an unlimited quantity. On the other hand, the melted crystals will dissolve 20 to 25 per cent. of water, and this prevents the crystallization of the phenol at ordinary temperatures. If, however, the mixture be exposed to a temperature of 0° C., a hydrate of phenol separates in the crystalline form. From the fact that phenol was separated from tar oil by means of an alkaline solution, and especially from its appearing to form a compound with potassic hydrate, it was supposed to possess an acid character; on further investigation, however, it was found to possess none of the characteristics of an acid, and it forms no definite salts with bases (Calvert, *Journal of the Chemical Society*, vol. viii., pp. 67 and 68.) On the other hand, in its chemical relationships, it exhibits the character of an alcohol, and it may be regarded as the hydrate of the hypothetical radicle phenyl C_6H_5, just as ordinary alcohol is the hydrate of ethyl C_2H_5. Phenol is thus the alcohol of benzine, the first member of the aromatic series of hydrocarbons, and the analogy between ordinary alcohol and phenol is clearly shown if we write the formulæ of the different members of the series as derived from the radicle, of which the parent hydrocarbon may be considered the hydride. For instance, taking the radicles phenyl and ethyl respectively, we have:

	Phenyl Series.	Ethyl Series.
Hydride	$(C_6H_5)H$ or Benzene.	$(C_2H_5)H$ or Ethene.
Alcohol	$(C_6H_5)HO$ or Phenol.	$(C_2H_5)HO$ or Ethylic Alcohol.
Ether	$(C_6H_5)_2O$ or Phenylic Ether.	$(C_2H_5)O_2$ or Ethylic Ether.
Aldehyde	$(C_6H_5)COH$ or Phenylic Aldehyde.	$(C_2H_5)COH$ or Propylic Aldehyhe.
Acid	$(C_6H_5)CO_2H$ or Benzoic Acid.	$(C_2H_5)CO_2H$ or Propionic Acid.
Ketone	$(C_6H_5)_2CO$ or Diphenyl Ketone.	$(C_2H_5)_2CO$ or Diethyl Ketone.

In the one case, the second member is the alcohol phenol, and in the other case, ordinary alcohol. There is, therefore, *prima facie* evidence that phenol *may* be an alcohol, merely from the fact that its composition, as determined by analysis, enables it to supply the place of the alcohol member in the phenyl series. But in the chemistry of carbon, where cases of isomerism and metamerism are so abundant, this fact is not sufficient, and it is necessary to seek for confirmatory evidence in the chemical behavior of the compound. This evidence is furnished by several reactions in which phenol behaves in a manner closely analogous to ethylic alcohol under similar conditions. When, for instance, phenol is acted upon by potassium, hydrogen is given off and is replaced by the metal—

$$2\,C_6H_5OH+K_2=2\,C_6H_5OK+H_2.$$

In a similar manner when alcohol is acted upon by potassium the same interchange takes place—

$$2\,C_2H_5OH+K_2=2\,C_2H_5OK+H_2.$$

Again, when phenol is heated with sulphuric acid, half the hydrogen of the acid is replaced by phenyl—

$$\left.\begin{matrix}H\\H\end{matrix}\right\}SO_4+C_6H_5OH=\left.\begin{matrix}C_6H_5\\H\end{matrix}\right\}SO_4+H_2O.$$

Sulphophenic acid being produced; from this the sulphophenates or sulphocarbolates are formed by replacing the remainder of the hydrogen by the metal whose salt is required. These changes are closely paralleled by the corresponding reactions of ethylic alcohol, which, with sulphuric acid, produces sulphethylic acid—

$$\left.\begin{matrix}H\\H\end{matrix}\right\}SO_4+C_2H_5OH=\left.\begin{matrix}C_2H_5\\H\end{matrix}\right\}SO_4+H_2O.$$

In 1865 Calvert examined the white crystalline product which is formed when phenol is mixed with a strong solution of caustic potash, and which was supposed to be a salt of carbolic acid. It was found that the crystals consisted only of phenol, with a little adhering alkali. There can be no doubt, therefore, that phenol belongs to the alcohols, and absolutely pure phenol may be appropriately called "absolute phenol." Of this the sample before you is prepared in the form of minute granular crystals which fuse at 41° C. and boil at 184°. The crystals have a faint fragrant odor, and having no tendency to liquefy on exposure, they will probably be found a convenient pharmaceutical preparation. Phenol is produced by the dry distillation of several organic bodies besides coal, viz., Salicylic acid, gum benzoin, resin of *Xanthorrhœa hastilis*, quinic acid, and chromate of pelosine. The action in the case of salicylic acid is especially interesting, as the latter may also be produced from phenol by the action of carbonic anhydride and sodium. At present salicylic acid is being manufactured from this source; its composition is the same as that of carbonic acid in which one atom of hydrogen is replaced by the radicle phenyl—

Carbonic Acid.	Salicylic Acid.
$\left.\begin{matrix}H\\H\end{matrix}\right\}CO_3.$	$\left.\begin{matrix}C_6H_5\\H\end{matrix}\right\}CO_3.$

A large number of derivatives have been furnished by phenol, some of which are of considerable commercial importance, although they were not applied to industrial uses to any great extent until nearly twenty years after the discovery of phenol; in fact, this body has a commercial history similar to that of oxalic acid, benzol and many other organic compounds which, after their first discovery, were known for some years as chemical curiosities only, until at length they were found to possess qualities which make them useful to mankind, and which render their manufacture a profitable enterprise. It is little over twenty years since phenol was first manufactured on a large scale, and at the present time the production in this country amounts to several hundred tons annually. A large proportion of this is consumed in manufacturing two colored derivatives of phenol which are employed as dyes. I allude to the picric and rosolic acids. When nitric acid is made to act upon phenol, three different nitro-derivatives may be produced by varying the conditions under which the action takes place. In all cases the action consists in the replacement of part of the hydrogen of the phenol by the group nitryl (NO_3), and 1, 2 or 3 atoms of hydrogen may be so replaced, forming the mono-, di- and tri-nitrophenic acids respectively, thus:

$$\begin{array}{cccc} \text{Phenol.} & & \text{Nitrophenic Acids.} & \\ C_6H_6O. & C_6H_5(NO_2)O, & C_6H_4(NO_2)_2O, & C_6H_3(NO_2)_3O. \\ & \text{(mono-)} & \text{(di-)} & \text{(tri-)} \end{array}$$

All these derivatives possess distinctly acid properties and form definite crystallizable salts, but only the last of them is of commercial importance. Tri-nitrophenic or picric acid is formed when nitric acid and phenol are allowed to react upon one another, and the mixture is afterwards boiled with concentrated nitric acid. Pure picric acid crystallizes in pale yellow needles, which dissolve in about eighty times their weight of cold water, forming an intensely yellow solution.

Like many organic compounds which have had 3 atoms of hydrogen replaced by 3 atoms of NO_2, such as gun cotton, or trinitronaphthalene, picric acid, and especially the picrates, are liable to undergo violent decomposition when heated, the picrates of the alkalies exploding with much violence. The most important application of picric acid is for dyeing silk or wool, to which it imparts a beautiful lemon-yellow shade; the acid merely requires to be dissolved in water with the addition of a little sulphuric acid, which is found to assist the process of dyeing. When a solution of picric acid is gently heated with cyanide of potassium, isopurpurate of potassium is produced; from this the ammonium salt can be obtained, which exactly resembles the dyeing material, murexid or purpurate of ammonium—

$$C_6H_3N_3O_7+3CNK+3H_2O=C_8H_4KN_5O_6+CO_2+NH_3+2KHO$$

The other colored product derived from phenol is rosolic acid, known in commerce as aurine or coralline. This substance is produced when phenol is heated with an alkali, together with certain metallic oxides, and also when sulphophenic acid is heated with oxalic acid to a temperature of 120° C.; the last method is the one employed on the manufacturing scale. When the action is complete, the excess of sulphophenic acid is washed out by repeatedly boiling with water, and the rosolic acid is finally melted, in order to remove the water which it has retained; on cooling, it assumes the condition of an amorphous mass with a beetle-green lustre, in which form it is known as aurine, or yellow coralline of commerce. In this state rosolic acid contains a quantity of unchanged phenol; when freed from this, it may be obtained in the crystalline form. Aurine is soluble in alkaline solutions and in alcohol; it is largely employed for dyeing silk and wool, to which it gives a bright orange color, often seen on sheepskin mats. When aurine is heated under pressure with ammonia solution to 150° C., a coloring matter is formed which produces a red shade, instead of the orange shade imparted by aurine; this substance is called red coralline. A blue coloring matter is obtained from aurine by heating together aurine, anilin and benzoic acid; this, at one time rather extensively used, is now supplanted by the anilin dyes.

We have now completed the list of coloring matters which are derived directly from phenol, and it will be admitted that the contributions of this body to the great magazine of tar-colors is by no means unimportant.

I now pass on to the consideration of some of the properties of cresylic acid, or cresol. The remarks already made in reference to the constitution of phenol will equally apply to cresol, this body being an alcohol and not an acid. Three isomeric modifications of cresol are known, which are distinguished as para-, meta- and ortho-cresol, and these stand in the same relation to toluene as phenol does to benzene.

Toluene.	Cresol.
$(C_7H_7)H.$	$(C_7H_7)OH.$

Paracresol constitutes the greater portion of the crude cresol derived from coal-tar; it is very deliquescent, and its presence in commercial phenol causes the latter to liquify on exposure; its boiling point is about 200° C. Orthocresol is believed to exist in coal-tar; but it has also been obtained (as well as paracresol) by fusing potassium toluene-sulphate with potassium hydrate—

$$C_7H_7SO_3K+KOH=(C_7H_7)OH+K_2SO_3;$$

its boiling point is about 189° C.

Metacresol has not been obtained from coal-tar; it is formed by the resolution of thymol into cresol and prophylene, by heating with phosphoric anhydride; its boiling point is 195° to 200°.

$$C_{10}H_{14}O=C_7H_8O+C_3H_6.$$

The derivatives of cresol have not been so perfectly studied as those of phenol, partly on account of the difficulty of obtaining the different isomers in a pure state in large quantities. None of them have yet been applied to any useful purpose in the arts or manufactures, but cresol itself is employed even to a greater extent than phenol for purposes of disinfection. The antiseptic qualities of cresol and phenol have been carefully studied during the last ten or fifteen years, and a large amount of experience has been gained by their practical employment as disinfectants. These alcohols possess some property by virtue of which they are able immediately to arrest those changes in organic bodies which owe their origin to the development of protoplasmic life. This is not effected by oxidation or other chemical change, as in the case of the permanganates, ozone, chlorine, etc., for there is reason to believe that the antiseptics themselves suffer no change. Both phenol and cresol will precipitate albumen and gelatine from their solutions, and it has been suggested that they may exert a similar power on the sarcode which forms the structure of the above named organisms; whatever be the method by which the effect is produced, the fact itself is sufficiently established. Almost every species of decay to which organic matter is liable may be prevented by the presence of a minute quantity of the tar antiseptics, and from their volatile character they may be made to operate on the atmosphere as well as on liquid and solid bodies. This antiseptic quality was very soon recognized by medical authorities, and it was found that the usual septic condition of suppurating wounds might be entirely prevented by employing a dressing in which a small quantity of phenol or cresol was introduced; the subject was thoroughly investigated by Dr. Lister, of Edinburgh, to whom we are chiefly indebted for the antiseptic method of treating wounds, and also for some of the very convenient forms in which the antiseptics are applied.

The question naturally arises, if these antiseptics are so certain in their action upon the vital germs which accompany decay, may they not be useful agents for internal administration in those diseases in which the morbid state of the blood is supposed to be owing to the propagation therein of poisonous germs. Of course it is impossible to administer either phenol or cresol in a pure state, and even a weak solution is found too irritating to the delicate mucous surfaces of the stomach, except in very small quantities, so that for some time the test could not be applied. Recently, however, it has been found that the salts of sulphocarbolic acid, which may be given in tolerably large doses, are decomposed in the system, the phenol being re-formed and set at liberty. By this method it is possible to administer phenol in such quantities as to produce cerebral symptoms, but I have not seen a sufficient number of reports as to its action to determine its success or otherwise. Numerous other applications of these antiseptics have been made, and are continually being made as their properties become more generally known. I will only allude to the preservation of gelatin size in hot weather, and of hides that are intended for tanning. Some years ago I had a thorough trial made of this method of preserving hides, in order to ascertain whether the antiseptic solution had any injurious effect on the after process of tanning. The trial was made at the tanyard of Mr. Beakbane, near Liverpool, and it was found that the hides were in no way injured by a two per cent. solution of the antiseptics, but after lying in a wet state during several weeks of warm weather, they afterwards behaved in the tan-pit exactly like fresh hides. In conclusion, I beg to draw your attention to a few zoological specimens, which were collected three years ago by my brother in India, and sent to England in a two per cent. solution of crude cresol. The state of preservation is complete.—*London Pharm. Journal.*

Arbutin in Kalmia Latifolia.—Mr. George W. Kennedy, in the January number of the *American Journal of Pharmacy*, reports the existence of *Arbutin* in the mountain laurel.

PURIFICATION OF OLEIC ACID.

Mr. Chas. Rice, of New York, in answer to Query No. 11, presented the following as the most practicable process for the preparation and purification of oleic acid:

The desired aim is to obtain an acid which is liquid at ordinary temperatures, and is as free as possible from oxyoleic acid and coloring matter. After many trials and failures I finally succeeded in obtaining a satisfactory result by the following process:

Take of commercial oleic acid ("red oil") any convenient quantity. Expose it repeatedly to a temperature of about 45° F., and express the liquid portion.* Mix this with an equal bulk of sulphurous acid solution, place it in the light, and shake frequently until no more color is discharged. A crude acid, which was prepared from clean and fresh fats, and collected as the first run from the hydraulic press, before the pressure had been raised high, will discharge nearly all its color; generally, however, the result is an acid of a light straw color. Finally the oleic acid is separated, washed repeatedly with cold distilled water, and put into bottles, which should be kept full and in a cool place. Oleic acid thus prepared dissolves metallic oxides readily and completely, and mercuric oxide without reduction.

In conclusion, I would state that, in making oleate of mercury, it is essential to use only such mercuric oxide as is *thoroughly dry*, and to sift it in small portions at a time upon the surface of the oleic acid, each fresh portion being well incorporated before another is added. Only in this way can an intimate mixture be made of the acid and the oxide, which latter has a great inclination to cake, thereby diminishing the surface upon which the acid could act. Solution should be promoted by frequent stirring, at ordinary temperatures, since experience has shown that all heating is positively injurious.—*Extracted from Proceedings American Pharm. Association*, 1874.

THE USE OF FLIES.

Mr. Emerson, chemist, West Hartlepool, lately set himself to discover if there were any useful ends accomplished by that one drawback to the lovely summer months, the common house fly. He communicates his experiments to a local paper, and has since forwarded an account of them to us. Having secured one and laid him on his back, and glued his wings to the object glass of a microscope, he observed that the little animal was covered—legs, body, and wings—with an innumerable quantity of lice. "I was so disgusted," Mr. Emerson proceeds, "with what I had considered a pretty fly, that I loosed his wings and let the lousy fellow go; after his departure, however, I remembered that I had not got the information I desired, viz., his use and habits; so I caught another and put him into the same position as the former one, and, to my dismay, found him as lousy as the first. I thought this very singular, but I was determined to have a close inspection; I got part of a wing in sight, which was beautiful, until I caught a view of the head of one of the vermin coming along to invade my pleasure ground with his unsightly body; I shifted my glass to have a peep at the body, when one of the legs of the fly came dangling into view, and on the tiny shanks were some of my old enemies. What is that I see? A miniature elephant's trunk now comes in view and licks up a quantity from the leg. I move the glass to have a look at the fly's head, to see how he appears in his confinement; what a splendid large eye! He is busy with his proboscis or tongue, going rapidly in all directions, and, by the expression of his eye, looks as if he was quite satisfied and enjoying his meal. I move the glass again to examine his body, which is covered with the vermin, and every now and anon there was a switch of the tongue, licking them off; these must be her progeny (I had up to this time treated my captive in the masculine gender), and she is a cannibal, eating her offspring. I gave liberty to my object, and was more than ever out of love with my fly. I went into the kitchen to watch their gambols around the gas bracket, and to admire their swiftness through the air, and wondered if they were happy with their young hanging about them; but I had lost faith in their innocency, and also in the harmlessness of their alighting on my bread and butter. I observed a sheet of clean note paper lying on the dresser; presently two flies lit on it, and appeared to be licking something off it; I laid hold of the paper and took it to the microscope; I put a corner on the glass, and there were some of the progeny of the fly on it. This set me thinking. I took a cloth and rubbed the paper well, then tried it again and found none on it. I took it into the kitchen again and waved the paper around, taking care that no flies touched it, went back to the microscope, and there found animalcules same as on the flies. I had now arrived at something definite; they were not the progeny of the fly, but animalcules, floating in the air, and the quick motions of the flies gathered them on their bodies, and they then went into some quiet corner to have their dainty meal. Further experiments convinced me that I had found the real use of the flies. I afterwards caught one in a bedroom; it was one of Pharaoh's lean kine; examined it, and there were no animalcules on it, neither could I get any in the room. I then tried the yard near to the kitchen, and found very few there; then went into the back street, where it was neither very sweet nor clean—that morning the scavengers had been cleaning out the ash-pits—got plenty on my paper there. I arrived at the conclusion that instead of the flies being a pest and a nuisance, they are the friends of mankind, and should not be slaughtered wholesale, as they generally are; for wherever there are the most animalcules, there will be found the most flies to feed on the same. Those experiments were made in sultry weather. I always found my sport spoiled after heavy rain and strong winds, for then I could not bag much game; and when frost set in I found none. I may say that I have tried an endless variety of disinfectants and purifiers to overcome these animalcules, and that I found nothing so effectual as burning sulphur on a dust-pan, and carrying it about the place."

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* Dr. E. R. Squibb stated to the writer that he finds it preferable to cool the crude acid first to 60° F., the liquid product of this to 50° F., and the remaining liquid product to 45° F.—C. R.

Mr. Emerson adds that he is now investigating the spider, and trying to discover what is the use of him. If our correspondent should conclude that the main use of spiders is to catch flies, that the use of flies is to catch lice, he will be in duty bound to proceed to the remaining problem respecting the purpose served by the last named tribe. Whatever this may be, Mr. Emerson certainly deserves credit for his patient and skillful investigation, and for his interesting and, we believe, novel observations.—*Chemist and Druggist.*

ACTION OF BROMINE UPON SOME ALCOHOLS.*

BY M. HARDY.

The action of bromine upon alcohol has been long studied. In 1832, Loewig recognized that bromal is one of the products of the reaction. He prepared it by pouring gradually three or four parts of bromine into one part of absolute alcohol, kept cool with ice; after standing for a fortnight, he distilled off three-fourths of the liquid, and then added water to the residue, and thus obtained crystals of hydrate of bromal. Schoeffer caused bromine vapor to pass into a relatively small quantity of alcohol, and, as products of the reaction, obtained bromide of ethyl, hydrobromic acid with a little bromine, a small quantity of acetic ether, bromal, bromoform, tetrabromide of carbon, and a substance which was decomposed by water, giving bibromacetic acid.

Schoeffer's process, like that of Loewig, caused the formation of a quantity of secondary products, and did not manifest clearly the transformation which alcohol undergoes in the presence of bromine. This may be accomplished by dropping into a long-necked vessel containing absolute alcohol a suitable quantity of bromine in successive portions, so as to avoid too great elevation of temperature, sealing the vessel in a lamp flame, and heating it during several hours to 100° C. in a water-bath. When the reaction has terminated no gas is evolved upon the opening of the vessel, and the liquid, perfectly decolorized, forms two layers, which may easily be separated. The upper layer contains hydrobromic acid in solution in water; the lower contains bromide of ethyl and bromal, a portion of the latter being free and a part combined with a molecule of alcohol, forming a compound similar to the alcholate of chloral described by M. Personne, and which the author proposes to call alcoholate of bromal.

$$\begin{gathered}3(C_2H_6O)+8Br= \\ \underbrace{C_2H_5Br}_{\text{Hydrobromic ether.}}+\underbrace{C_2H\,Br_3O,C_2H_6O}_{\text{Alcoholate of bromal.}}+4HBr+H_2O.\end{gathered}$$

$$2(C_2H_6O)+8Br=\underbrace{C_2H_5Br}_{\text{Hydrobromic ether.}}+\underbrace{C_2HBr_3O}_{\text{Bromal.}}+4H\,Br+H_2O.$$

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* *Comptes Rendus*, vol. lxxix., p. 806.

These substances separate upon distillation.

Propylic Alcohol.—Propylic alcohol, heated to 100° C. with bromine in sealed tubes, separates into two layers; the one consists of water holding hydrobromic acid in solution, the other of propyl hydrobromic ether and propyl alcoholate of propyl bromal. The propyl alcoholate of propyl bromal is a slightly yellow liquid, giving upon analysis figures corresponding to the formula—

$$C_3H_8O,C_3H_3Br_3O.$$

Butylic Alcohol.—Butylic alcohol submitted to the action of bromine under the same conditions gives a similar reaction, but the separation into two layers takes place after a more prolonged ebullition. The lower layer consists of water and hydrobromic acid; the upper of butylhydrobromic ether, butylalcoholate of butylbromal, and a non-volatile residue which carbonizes at a high temperature. The butylalcoholate was distilled by the author in a current of carbonic acid, and gave upon analysis numbers corresponding to the formula—

$$C_4H_5Br_3O,C_4H_{10}O.$$

In this distillation butylbromal was not obtained, and in rectifying under a pressure of 40 centimetres only the butylalcoholate separated.

Amylic Alcohol.—The reaction of bromine upon amylic alcohol likewise yields water charged with hydrobromic acid and a denser liquid. The latter consists of amyl hydrobromic ether, easy to separate by distillation, and a liquid which separates upon cooling after a portion of the ether has been distilled off. This liquid, mixed with sulphuric acid, was submitted by the author to distillation under diminished pressure, when a slightly colored liquid passed over, which gave upon analysis figures that induced him to consider it to be a molecule of amylbromal, combined with one or two molecules of amylic alcohol.—*Lond. Pharm. Journal.*

THE OLIVE AND THE OLIVE TREE.

Italy is not only the country of the orange, myrtle and laurel; on the contrary, our expectations of finding there a garden of paradise is not realized; for, like other countries, Italy possesses a great number of useful plants of agriculture. These plants give to the different provinces and parts of land quite a definite character. Along the low shores of the Po and its branches of small rivers, extend to a great length those rich rice plantations which are very profitable to the farmers of Lombardy, but, by their swampy nature, produce very dangerous fevers. Further south the vegetation grows more and more rich, and the productions more select. The plains of Tuscany, through which the Arno winds its way, favor the culture of the best wheat, of the fine flour of which the celebrated macaronis are made, and besides this it furnishes the excellent straw, which thousands of busy hands braid into those elegant hats which are sent everywhere, and appreciated by the beauties on the Rhine, the Seine, the Thames and the Hudson.

There are two plants covering all the Peninsula; the vine and the olive tree. They grow alike luxuriously in the cool north on the shores of the Po, as in the sunny south, where their green leaves form the ornament even of the Vesuvius and Etna.

The original home of the olive tree is Western Asia; it grows still wild there. According to the Scripture it is one of the oldest plants. The dove brought an olive branch to Noah as a sign of the decreasing of the flood. In very old times the tree was brought from Asia to Greece and Italy. In the old Hellas it stood in high estimation, and it was dedicated to Pallas Athene; her temple of Athens was situated in a wood of olive trees, and a wreath of olive branches was considered the highest distinction a citizen of Greece could receive. At those celebrated olympic festivals, the conquerors were crowned with such a wreath, and their names glorified by the people. The olive was always considered a sign of peace, the emblem of force and power; and until this day the olive has not lost these attributes, for the Catholic church employs the olive oil, either alone or mixed with balsam, at her divine services.

The olive tree demands a dry and limy soil; its importation into Italy was therefore very successful. The soil of the Appenines, which extend through the whole Peninsula, and branch off in all directions, consists mostly of lime, and is very favorable to the growth of the olive tree. We find the stately tree, with its beautiful crown and evergreen leaves, spread over the whole Peninsula where the temperature does not fall below 60°. The foliage is appearingly insignificant, and cannot be compared with that of other southern plants. The leaves are uncommonly narrow, and of almost oval shape, pretty thick and stiff; the upper side has a light green color, the other is covered with some white dust. From some distance the olive wood has the appearance of a wood of willow trees, but the olive tree, like the laurel, remains green all the year. The height of the tree is considerable. The wood is strong, and in southern countries it is also used for fine cabinet work.

The charming and beautiful spring of Italy adorns the useful tree with small, roundish blossoms, filling the air like the jessamine with the finest perfume, and developing soon into green fruits resembling the plum. These fruits are attached to short stalks, in which the tree, under the influence of the sun's heat, forms that delicate which has such a widespread reputation. Strength and durability are the attributes of the olive tree; it does not belong to the weaklings of plants which pass away after a short existence; it defies time and lives for centuries.

The most extensive use is made of the olive. Its harvest begins when scarcely ripe. The green olives are put into some solution of salt; there they are kept for some time, to make them lose their natural bitter taste, then they are carefully preserved in vinegar, mixed with different spices and sold in bottles or small barrels. Those of Tuscany and Lucca are liked the best, on account of their light green color and strong flesh. In all parts of Southern Europe they are, in this form, a daily food.

The treatment of the ripe olives is more important. They are gathered in fall, when they are as large as common plums; their color is dark green, and the soft kernel has changed into a hard stone, which contains a savory almond. The flesh is spongy, and its little cells are filled with the mild oil, which pours out at the least pressure.

The harvest of the olive in Italy takes place among the same noisy rural pleasures as in Germany that of the wine. The olive tree bears about ten pounds of fruit, but in very rich years double the quantity can be gathered. The finest oil is the so-called Virgin oil. To gain the oil no preparation is needed; the freshly gathered olives are put into little heaps, and by their own weight the oil drops out, and is caught by some vessel. It is clear like water, has a delicate, nut-like taste, and no smell. When the fruits cease to give the oil by themselves, they are pressed with small millstones. The oil gained by this experiment is also clear and of pleasant taste, with the addition of some slimy substance. After this treatment the olives are still rich of oil; it only demands some work to draw it out. To accomplish this, the pressed fruits are put into sacks, boiling water poured over them, and then pressed once more. The oil gained by this process is yellowish green, has a sharp taste, and an unpleasant smell, because it contains some filthiness. Sometimes the so-treated olives are once more pressed and boiled over, but the so-gained oil is called in France "huile d'enfer," and is only for burning or other such uses. The olives may also be brought through a fermentative process, before pressing them, which gives more oil, but of a less fine quality.

The Italians keep their oil in such stone jars as did their classic ancestors. The oil for sale is filled into barrels of oak wood imported from Germany. The oil needs always a very attentive treatment. By a long rest some slimy parts of it settle at the bottom; these dregs must be taken off, or the oil might become rancid, therefore the barrels are tapped every six months, and filled anew. The treatment resembles that of wine, but with the difference, that oils of a fine quality can seldom be kept more than three years.

A curious manner to preserve the olive oil we find at Gallipoli, a town on the coast of Southern Italy. The square Bay of Tarante divides the most southern part of Italy into two differently formed peninsulas. The western, extending into Sicily, is the luxurious Calabria, where the rays of the sun rival with the subterranean fire to create a climate like the African. The eastern is the Apulia, less long than the other, but even more productive; in old times it was called "the golden," on account of the rich fields of wheat resembling golden waves.

The mountains stretching into this grand garden are a low continuation of the Appenines, consisting also of limy soil; the branches reach even the coast of the sea, and at some places they continue below the water, rising from time to time as small islands. Upon such a rocky island, on the inner part of the bay, we find Gallipoli, a town of 10,000 inhabitants.

The number of these oil reservoirs, and the stores kept there, are so great that Gallipoli is considered the great oil magazine of Italy. At the port of the town, one of the best of Southern Italy, as it is not sandy like the once renowned harbor of Tarante, vessels of all nations are coming and going loaded with oil.

THE OLIVE CROP.—Olive oil is produced in large quantities in Tunis. The olive crop has been so abundant during the past year, that as many as 3,472 tons, of the value of $629,465, have been shipped to Great Britain, France and Italy. The tanks in Tunis containing the oil are said to be capable of holding 6,000 tons. It is now contemplated to try the effect of a steam mill for the purpose of manufacturing the oil.

PREPARATION AND PROPERTIES OF GLYCERIN.

BY E. SCHERING.

Crude glycerin is obtained as a by-product in the manufacture of stearin. Formerly the dilute glycerin solution was allowed to run away, but no manufacturer does so any longer, for the article is too valuable and too much in demand. Different methods are employed to decompose the fats employed:

1st. Complete saponification by means of caustic lime; the glycerin separates with the excess of lime, and is evaporated.

2d. The fats are mixed with a few per cent. of sulphuric acid, and subjected to a high temperature. The glycerin that separates contains much sulpho-glyceric acid.

3d. The fats are decomposed by superheated steam alone, and the stearic acid as well as the glycerin distilled off.

The once-distilled glycerin is the best for cleaning and for distillation. It contains but little butyric and fatty acids, and has the sweet smell of glycerin. It is unnecessary to first remove the foreign organic acids, the caustic lime, or the sulphuric acid. To make purified glycerin (*glycerin. depurat. album*) from the crude, if the latter contains lime, carbonic acid is passed through it first, and then superheated steam, in order to drive out the butyric acid; finally it is passed through animal charcoal to decolorize it, which often requires from two to three weeks, according to the quality. It is then evaporated down in vacuo. If the glycerin contains sulphuric acid, it must be diluted and treated while hot, with carbonate of barium.

Glycerin. depurat., so called, always contains more or less chlorine, sulphuric acid, fatty acids, lime, etc., and most of it has a foreign odor, so that it can not be employed for medicinal purposes. It is principally employed for mixing with soap, filling gas meters, and for different technical uses.

Glycerin. pur. distillat.—Crude glycerin is distilled in a retort or still with superheated steam, the greatest care being required, for if the steam is not hot enough it distills too slowly, while if the steam is too hot it comes over colored, and has an odor of acrolein. It is difficult to prevent very small quantities of chlorine and of lime being carried over. Suffice to say that this preparation offers innumerable difficulties, and it is seldom obtained so pure as to answer the strictest demands of pharmacy. It is either not entirely colorless and odorless, or it contains traces of chlorine or lime. Hence the test of the pharmacopœia may lead to false conclusions.

1. "It should not blacken when treated with dilute sulphuric acid and evaporated." How long should the evaporation be continued? If evaporated until the water in the dilute acid is all driven out, the glycerin is subjected to the action of concentrated acid, and, being an organic body, is of course charred and blackened. Is this a test for sugar, or what is its use?

2. "Glycerin does reduce a solution of ammonia nitrate of silver." Every specimen of distilled glycerin—and pure glycerin can only be

prepared from the distilled—reduces silver. On boiling a short time, a beautiful mirror is formed when it becomes cold. The author was unable to remove the reducing body formed by over heating. The glycerin was boiled with an excess of oxide of mercury, which was reduced, but the filtered glycerin showed the same reaction toward silver.

3. The pharmacopœia test with caustic potash and sulphate of copper, with which the glycerin should not turn red, is, the author thinks, a suitable and proper one. Fehling's solution, which is the most delicate test for sugar, can not be employed here, since it gives a yellowish brown precipitate with glycerin. The tartaric acid of Fehling's solution seems to play some part in the reaction.

The difference in specific gravity from 1.23 to 1.25 is very great, and corresponds to a difference of 7 per cent. If the glycerin is very concentrated it irritates the skin, producing a smart, because in this concentrated state it has a great affinity for water. Hence it is better to employ the dilute of 1.23 specific gravity. Chemical tests made with specimens of glycerin from different and best known sources, have shown only very slightly qualitative variations, a proof that none of the methods of purification at present in use is able to produce another sort of glycerin.—*Journal of Applied Chemistry.*

EXTRACTION OF LINSEED OIL.

We may say at the outset that linseed contains, on an average, about thirty-three per cent. of oil, though the amount varies materially, the percentage obtained fluctuating considerably, not being alike on any two successive days. This is partly due to the varying richness of the seed, and partly to the manner in which it is manipulated in extracting the oil, it being a very easy matter to lose a considerable percentage of the oil by a lack of skill in any of the processes, though they all seem so simple.

The first thing done with the seed from which the oil is to be extracted is to pass it through a screen, to cleanse it from foreign substances. The seed is received in bags, containing from three to four bushels, and pockets, containing one-sixth of that quantity. Having been screened, it is passed through a mill, whose large iron rollers, three in number, grind it into a coarse meal. Thence it is carried to what are known as the "mullers," which are two large stones, about eight feet in diameter and eighteen inches thick, weighing six tons each, standing on their edges, and rolling around on a stone bed. About five bushels of the meal are placed in the "mullers," and about eight quarts of hot water are added. This having been thoroughly done, the meal is carried by machinery to the heaters, iron pans, holding about one bushel each. These are heated to an even temperature by steam, and are partly filled with the meal, which, for seven minutes, is submitted to the heat, being carefully stirred, in order that all parts may become evenly heated. At the end of that time the meal is placed in bags, which, in turn, are placed in hydraulic presses, iron plates being placed between the bags, Pressure is applied for about eight minutes, until, as is supposed, all the oil is pressed out, leaving a hard cake, known to the trade as oil cake or linseed cake.

The product of these various processes is known as "raw" oil, a considerable portion of which is sold without further labor being expended upon it. There is, however, a demand for "boiled" oil, for certain purposes where greater drying properties are needed. To supply this want, oil is placed in large kettles, holding from five hundred to one thousand gallons, where it is heated to a temperature of about five hundred degrees, being stirred continually. This process, when large kettles are used, requires nearly the entire day. While the boiling process is going on, oxide of manganese is added, which helps to give the boiled oil better drying properties. A considerable portion of the oil is bleached, for the use of manufacturers of white paints.

The oil-cake to which we have referred is not waste product; but possesses from twenty-five to thirty-three per cent. of nitrogenous substances, and is largely used for feeding cattle.—*Chemist and Druggist.*

OPIUM—ITS ADULTERATIONS.

BY DR. ALEX. CHRISTISON,

Assistant Inspector of the East India Opium Manufactory, Ghazerport.

Opium adulterated with an extract or decoction of *green poppy heads,* is detected by the color and odor, also the smoothness of the opium when rubbed down upon a porcelain plate. When adulterated with *poppy petals,* the smell of the opium is sour and disagreeable, and can be detected when rubbed on a plate with the point of finger.

Opium, when adulterated by tobacco, or its preparations, can be detected by the odor given off when slightly heated.

Catechu can be detected by exhausting the opium with boiling water, filtering through paper, and testing the filtrate with a solution of sesquichloride of iron. If catechu, or some other astringent adulterant, is present, a black precipitate will result. When adulterated with *gum,* the addition of strong alcohol to a concentrated infusion of the opium will produce a thick flocculent precipitate.

The admixture of *flour* is a very ingenious adulteration, as thereby the general appearance of the opium is very little changed; it can easily be detected, by the fact that a decoction made from such an adulterated opium is incapable to be filtered through paper, and the addition of a solution of iodine will give the characteristic reaction of the presence of starch. The same is applicable when opium is adulterated with *bruised potatoes;* at the same time the lumps of the potato are made visible by rubbing down the opium on a porcelain plate, with a small quantity of water.

Sugar is easily detected, when present, by the frothing of a decoction when shaken, and also by Trommner's test.

Opium, when adulterated with *charcoal, carbonate of lime, sand, mineral, and earthy matters,* can be readily detected by smoothing a little of the moistened opium on a glazed white surface with the point of the finger, and by separating these insoluble impurities by means of boiling water.

When opium is mixed with fragments of vegetable fibre, cloth, paper, leather, etc., the admixture is evident to sight and touch, when rubbed down with the point of the finger, on a porcelain plate; the magnifying glass is also a great auxiliary in determining the character of the adulterant.

The above is an abstract of a communication presented to the Museum of Science and Arts, of Edinburgh, Scotland. It was accompanied with illustrations on opium; its sources, modes of preparation, and adulterations.

At a visit which we paid the Museum of Science and Arts, we had the pleasure of seeing, among many very interesting and instructive objects, the following pieces of apparatus, which are historical:

A copper still, for careful distillation; and an apparatus for the saturation of water with gaseous ammonia, or chlorhydric acid; a bottle for the transferring of gases, and a blow-pipe and bellows, invented and formerly the property of the eminent Sir Humphrey Davy.

Also, twenty-three pieces, consisting of retorts, flasks, and other apparatus; also a pneumatic trough, used in the collection of fixed air and other gases; also a scale of rather rude construction—all of which were employed by the eminent chemist, Dr. Joseph Black, for the illustration of his lectures during the period of 1766–1799. This collection was presented to the Museum by Professor Lyon Playfair.—*Ed. of the Pharmacist.*

NOTE ON THE PROXIMATE ANALYSIS OF CINCHONA BARK.

Limited to the separation of the four alkaloids, Quinia, Quinidia, Cinchonia and Cinchonidia, and the three acids, Quinic, Quinovic and Quinotannic.

BY ROBERT M. COTTON.

The process given below is nothing more or less than the combination of methods reported by different authorities, and given in Watts' Dictionary and Gmelin's Handbook, modified, in some particulars, after trial. The writer has found all the results of this process to be satisfactory. The same material was subjected to operations by other methods without obtaining as good results.

Any desired quantity—say one-half pound—of the powdered bark is macerated with warm water for two or three days, and then percolated, water being added upon the percolator to exhaustion. Hydrochloric acid is added to the percolate, to a distinct acid reaction; then solution of caustic soda is added, with stirring, to an alkaline reaction, and the mixture is set aside for some hours for subsidence of the precipitate. The whole is then filtered, and the precipitate well washed with cold water; this precipitate, *a*, contains the alkaloids, and the filtrate, A, contains the acids.

The washed precipitate, *a*, is exhausted with (much) ether, giving an ether-solution, *b*, containing the quinia and quinidia, while cinchonia and cinchonidia are left undissolved. Precipitate *a* is again washed with water, and then treated with 90 per cent. alcohol, which dissolves the cinchonidia with a little cinchonia: solution *c*. Precipitate *a*, washed again with water, remains as nearly pure cinchonia. The residue of solution *c* is the cinchonidia, with a little cinchonia. (Cinchonia is soluble in about 120 parts of 90 per cent. alcohol; cinchonidia in about 12 parts of the same solvent.)

The quinia and quinidia of solution *b*, are separated from each other by the unlike solubilities of their oxalates, as follows: A moderately dilute water solution of oxalic acid is added to an acid reaction; the ether is allowed to evaporate or is distilled off, and the residue is treated with water. The solution *d*, contains the quinidia as oxalate, together with a very little oxalate of quinia. The residue is not soluble in water, is dissolved with dilute sulphuric acid, as acid sulphate of quinia, solution *e*. By precipitation with aqueous alkali, quinia is obtained from solution *e*, and quinidia from solution *d*.

Each of the four alkaloids may be obtained in crystals from a saturated alcoholic solution.

In the work for acids, the quinovic acid is precipitated with normal lead acetate, leaving quinic acid in solution. Also, if the lead acetate is added short of saturation, the quinotannic acid remains in solution. To accomplish this result, two-thirds of solution A is treated with neutral acetate of lead solution, just to complete saturation, and immediately mixed with the remaining one-third. The precipitate of quinovate of lead is filtered out, washed with water, suspended in water, and decomposed by dropping in very dilute sulphuric acid, until the precipitate turns white, carefully avoiding an excess (which would decompose the quinovic acid). The liquid is decanted from the lead sulphate, upon a filter, and the filtrate concentrated and left some time to crystallize as quinovic acid.

The filtrate from the precipitate by acetate of lead is concentrated to the consistence of a thin syrup, and set aside to crystallize. It may require the insertion of a nucleus for crystallization. There should now form a crystalline mass (quinic acid), mixed with yellowish drops of oily consistence (quinotannic acid). The mass is washed with ether, the residue being quinic acid, very deliquescent.

The ether solution is evaporated, leaving in residue the quinotannic acid, uncrystallizable.—*American Journal Pharmacy.*

AMERICAN PHARMACEUTICAL ASSOCIATION FORMULAS.

The following unofficial formulas were reported at the late meeting in Louisville (September, 1874), by John F. Hancock, Chairman of the Committee on Elixirs and Unofficial Formulas:

CHLORATE MIXTURE.

Take of	Chlorate potassium in fine powder	1 dr.
	Bicarbonate sodium	2 drs.

Mix.

CHLOROFORM AND ACONITE LINIMENT.

Take of	Chloroform	2 fld. ozs.
	Tincture aconite root	2 fld. ozs.
	Soap liniment	12 fld. ozs.

Mix.

STOKES' LINIMENT.

Take of	Oil turpentine	3 fld. ozs.
	Strong acetic acid	4 fld. drs.
	Yolk of egg	1
	Rose water	3 fld. ozs.
	Oil lemon	1 fld. dr.

Mix.

BALSAMIC DIACHYLON OINTMENT—(HEBRA'S OINTMENT.)

Take of	Pure olive oil	15 fld. ozs.
	Oxide of lead	3 ozs., 6 drs.
	Distilled water	2 pts.
	Oil lavender	2 fld. drs.
	Peruvian balsam	1 fld. oz.

To the olive oil add half a pint of the water, and mix thoroughly; then sprinkle in the oxide of lead, and again stir well. Place the vessel containing the mixture in a water bath, or over a slow fire, and stir briskly until the combination is thorough. When the ointment is cold add the oil of lavender and peruvian balsam, and mix intimately; lastly, add the remaining water.

BENZOATED OXIDE OF ZINC OINTMENT.

Take of	Lard and olive oil, each	5 troy ozs.
	White wax	2½ troy ozs.
	Spermaceti	2½ troy ozs.
	Oxide of zinc	2½ troy ozs.
	Powd. gum benzoin	½ troy oz.

Mix.

OINTMENT OF RED OXIDE OF MERCURY.

With castor oil substituted for lard.

Take of	Red oxide of mercury in fine powder	1 dr.
	White wax	2 drs.
	Castor oil	6 drs.

Melt together the white wax and castor oil, pour the mixture into a warm mortar, and incorporate with it the red oxide of mercury.

COMPOUND POWDER OF PHOSPHATES.

Take of	Phosphate of sodium	½ troy oz.
	Phosphate of lime	½ troy oz.
	Phosphate of iron	½ troy oz.
	Sugar, in fine powder	1 troy oz.

Expose the phosphate of soda to heat, in a porcelain dish, until the water of crystallization is dissipated, taking care not to continue the heat until it is caustic to the tongue. Having the other powders perfectly dry, mix the whole thoroughly.

Dose—From ten to twenty grains, three or four times daily.

SPECIES ST. GERMAIN.

Take of Senna leaves	4 troy ozs.
Elder flowers	2½ troy ozs.
Fennel seed	10 troy drs.
Anise seed	10 troy drs.
Cream of tartar	6 troy drs.

Digest the senna in stronger alcohol, dry and mix intimately with the other articles, and put up in doses of five drachms each.

DIRECTIONS—Infuse the contents of one package in a half a pint of boiling water; strain and take at one dose for adult.

COMPOUND SYRUP OF HYPOPHOSPHITES.

Take of Hypophosphite of lime	256 grs.
Hypophosphite of sodium	192 grs.
Hypophosphite of potassium	128 grs.
Protosulphate of iron	185 grs.
Hypophosphorous acid, sp. gr. 1,036	9 fld. drs.
Sugar	12 troy ozs.
Water	q. s.

Dissolve 96 grains of the hypophosphite of lime in four fluid ounces of water, with the aid of heat, and acidulate the solution with a small portion of the hypophosphorous acid. Dissolve the protosulphate of iron in two fluid ounces of water; mix the two solutions, and allow the mixture to stand until the sulphate of lime, which is precipitated, has subsided, and pour the whole on a paper filter. After the clear solution has passed through the filter, wash the adhering hypophosphite of iron from the sulphate of lime with a small quantity of water, acidulated as before, and preserve the solution. Dissolve the remainder of the hypophosphite of lime with the hypophosphites of sodium and potassium in four fluid ounces of water, with the aid of heat, adding the remainder of the hypophosphorous acid. Mix the solutions, adding water sufficient to make the whole measure ten fluid ounces, which pour into a bottle containing the sugar, and agitate the mixture occasionally until the solution is complete.

COMPOUND AROMATIC SYRUP OF SENNA.

Take of Alexandria senna	4 troy ozs.
Jalap	1½ troy ozs.
Rhubarb	½ troy oz.
Cinnamon	1 troy dr.
Clove	1 troy dr.
Nutmeg	½ troy dr.
Oil lemon	20 minims.
Sugar	24 troy ozs.
Diluted alcohol	q. s.

Reduce the root, leaves and spices to a moderately fine powder, and treat with the diluted alcohol, by percolation, to exhaustion. When about one quart has passed, evaporate, by means of a water bath, to eighteen fluid ounces, and filter, if necessary; then add the sugar and dissolve by water bath; when cold add the oil of lemon. It should measure thirty-two fluid ounces.

COMPOUND SYRUP OF PHOSPHATES.

Take of Protosulphate of iron	10 troy drs.
Phosphate of sodium	12 troy drs.
Phosphate of lime	6 troy drs.
Glacial phosphoric acid	13 troy drs.
Carbonate of potassium	1 troy dr.
Carbonate of sodium	40 grs.
Muriatic acid	q. s.
Water of ammonia	q. s.
Sugar	35 troy ozs.
Cochineal, in fine powder	1 troy dr.
Tincture orange peel	4 fld. drs.

Dissolve the protosulphate of iron in two fluid ounces of boiling water, and the phosphate of sodium in one fluid ounce of boiling water; mix the solutions, wash the precipitate formed and drain it on a muslin filter.

Mix the phosphate of lime with four fluid ounces of boiling water, and add a sufficient quantity of muriatic acid to dissolve it; then add a sufficient quantity of water of ammonia to re-precipitate the phosphate of lime; wash the precipitate and drain it on the same filter with the phosphate of iron.

Dissolve the glacial phosphoric acid in about two fluid ounces of water, with the aid of heat; add the moist precipitates, and, when they are perfectly dissolved, add the carbonates of potassium and sodium. Transfer the whole to a jar or bottle, and allow the precipitate which is formed to subside. Draw off the clear solution with a syphon, and preserve it in a separate vessel. To the remainder, containing the precipitate, add a sufficient quantity of muriatic acid to dissolve it, and add it to the other portion of the solution, with a sufficient quantity of water to make the whole measure twenty-four fluid ounces; then add the sugar, cochineal and tincture of orange peel, and agitate occasionally until the sugar is dissolved. Lastly, strain or filter.

COMPOUND TINCTURE OF OPIUM.

Take of Tincture opium	1 fld. oz.
Tincture capsicum	1 fld. oz.
Spirit camphor	1 fld. oz.
Purified chloroform	3 fld. drs.
Alcohol	q. s. for 5 fld. ozs.

Each fluid drachm contains about 100 drops, consisting of twelve drops each of the first three ingredients, and four and one-half minims, or eighteen drops, of chloroform.

Dose—One teaspoonful in water for adults.—*Proceedings American Pharmaceutical Association*, 1874.

GLEANINGS.

To prepare pure crystallized *Elaterin*, Mr. F. B. Power, in the January number of the *American Journal of Pharmacy*, recommends the use of petroleum benzin, whereby the green adherent resin is removed from commercial elaterium. His process consists in treating the elaterium first with water, to remove the inert substances soluble therein, treating the residue with boiling alcohol, and subsequently with benzin.

Prof. Maisch, in the same journal, calls attention to the substitution of a species of agaricus for the true *larch agaric*, the powder of which is dusted over the false article, to impart to it the peculiar bitter taste of the true. The author further mentions the substitution of the bark of the root of some cottonwood tree for that of the bark of the root of the cultivated species of *Gossypium*, which is officinal in the U. S. Pharm. under the name of *Gossypii radicis cortex*.

A writer, "R," in the same publication, gives us some statistics regarding the drug business in the United States, which he has compiled from the official United States Census Reports:

OCCUPATIONS.	1850. Total Population, 23,391,876.	Proportion to Population.	1860. Total Population, 31,443,221.	Proportion to Population.	1870. Total Population, 38,558,371.	Proportion to Population.
Physicians	40,554	1 to 572	54,543	1 to 576	62,283	1 to 638
Druggists	6,139	1 to 3,778	11,031	1 to 2,850	17,369	1 to 2,219
Pat. Med. Manuf'rs	59	1 to 369,472	203	1 to 154,893	409	1 to 94,274
Perfumers	132	1 to 277,165	216	1 to 145,571	248	1 to 155,477

From the table it will be seen that the physicians have increased in about the same ratio as the population, the variation being very trifling for the past twenty years, while the druggists have increased in very much greater proportion; the ratio being for the ten years, from 1850 to 1860, 79.7 per cent., while the increase of population was 34 per cent.; and, for the period from 1860 to 1870, they increased 57.4 per cent., while the population increased but 23 per cent. The patent medicine manufacturers have increased at each interval over 100 per cent.

These figures are certainly very striking, and seem to point plainly to one reason of the many complaints of an absence of any profit in the drug business, namely, a business too much divided for all to be prosperous.

Discovery of a Lost Plant.—There has lately come to light a case which will rank among the most curious on record. The mines of Laurium, in Greece, which were worked about 1,600 years ago, are, in a great measure, composed of scoria, or the refuse of ancient mines, which still yields a high percentage of silver. In clearing away a mass of this refuse, a quantity of seeds were discovered, which must have been buried for at least fifteen centuries. Restored to conditions favorable for germination, to the heat of the sun and contact with the air, the seeds gave signs of life, burst their buds, and sent down roots into the earth and threw up stems into the light. When these last had budded and blossomed, lo! a lost species of the genus *Glancium* (horned poppy) of the order *Papaveraceæ* was revealed. Pliny and Dioscorides frequently describe the flower in their writings with great particularity, as its golden corolla is very beautiful; but it has hitherto been unknown to modern science. Now, the plant which had disappeared from the face of the globe for 1,500 years or more is resuscitated by a strange and happy accident.

EDITORIAL.

We have read with interest the recent report of the St. Louis Medical Society on the relations existing between physicians and druggists. The author has made some good points on the responsibilities and duties of each profession, which it would be well to reflect upon.

We think he is in error where he says that "education, acquirements, refinement and honesty exert but little influence in advancing the pecuniary interests of either profession." The every-day experience of men proves the contrary. These characteristics are often the stepping-stones to influence and moderate wealth. They also, when rightly used, bring the possessor a compensation above all estimate in money. To us it seems evident that the pursuit of moneyed wealth, for its own sake, is the basest use to which education can be put, and the prominence given to such success, as contrasted with other and greater success, is one of the demoralizing tendencies of the present age. The palaces of the patent medicine men are few and far between. Not every quack succeeds in gaining wealth; for, although he may succeed in selling his soul to evil, the price is not generally remunerative.

Another error is in stating that reform can only be accomplished through legislation. We take little interest in enforced morality, and less in the protection of any school of medicine or theology by statutory enactments. If the merits of any theory can not be shown in practice, let it step down and out. The less we have to do with it the better for all. If morality is not of inward growth, there is no morality. So we say boldly, if the medical profession desires reform, the change must begin and be developed within itself. No other reform, worthy of the name, is possible.

A proper education of its members will do more to elevate the medical profession than all other influences combined; but a multiplication of medical schools and the cheapening of diplomas will continue to drag down the standard and lessen the respect of the community for a *title* which, to the public, might signify, in many instances, the more fit occupation of mud digger. This reform lies within the power of the profession; for they only can be the means of limiting the number of colleges and enforcing a higher standard for graduation of students. When the profession shall awaken to the proportions of this evil and unite to put an end to it, the legislation can be had for the asking, not to protect the educated, for they need no protection of this sort, but to protect the community, by providing for a strict and impartial examination of all candidates by a competent board, free from political clap-trap, and free from the influence of any medical college in existence. Such a board of medical experts, appointed by the Governor or by the educated Judges of our Superior Courts, would possess the power to make the once honored title of M. D. again the synonym of education and fitness for the sacred duties of the physician.

The disposition made of the *prescription*, after the apothecary has dispensed it, is a question for the physician only. The apothecary occupies neutral ground, and can not, if he would, regulate it. If so desirable that it be dispensed but once, it lies with the physician to prohibit its use a second time, and to regulate the matter with his patient. The apothecary has no right, and, therefore, no power over it. It may be new to our medical friends, yet true, that in England, where most of our customs originated, it is the practice to furnish the patient with a *copy* or the original, whether requested or not; and here at least *one* physician, of very extensive practice in this city, requests the apothecary to return a copy of each prescription to the patient. Where doctors disagree who shall decide. The author's just criticism on the multiplication of medical schools, we indorse. Schools of pharmacy are not yet numerous enough to fall under the same objection. We wish they were more numerous and better; yet, we may say, with truth, that graduates in pharmacy are much superior to the average medical graduate, and nearer the standard set for him, in having a fair, if not exhaustive, knowledge of the four branches of study taught him; and, further, he is required to have had four years' experience in a dispensing store previous to graduation. When the medical student shall be required to study and be familiar with the duties of a physician, by constant contact for four years previous to graduation, he will be better fitted than many now are for his professional work.

A greater evil exists than would be an increase in the colleges of pharmacy. Some of these condemned medical schools, who, according to our author, graduate persons "little better than idiots," also pretend to graduate pharmacists, and it is almost needless to say they are of the same character. No previous service in a dispensing store is required, and the pupils are taught pharmacy by physicians. "When the blind lead the blind," etc. These are not of our fold, and we decline to be held responsible for their doings. Let physicians uphold, by their influence and patronage, only such colleges of pharmacy as shall place themselves upon record as legitimate and orderly schools, and one evil will be avoided. Another evil will be met and conquered when physicians cease appealing to the public for discrimination in the choice of medical advisors, and rely upon their own merits for service. Quack is only a relative term in the public mind, and is applied very justly to one who pretends to know what he is ignorant of, and all the legislation possible will not make a good physician out of an ignoramus.

We have only further to suggest that medical societies give earnest heed to the evils which need correction among themselves, leaving the task of reform in the colleges of pharmacy to those who are earnestly engaged in the good work.

REVIEWS AND BOOK NOTICES.

The Chicago Medical Register and Directory, 1874–5, containing a directory of the Medical Hospitals, Infirmaries, Asylums and Charitable Institutions, together with the Medical and other Scientific Associations of the entire State of Illinois. Published under the direction and supervision of the CHICAGO MEDICO-HISTORICAL SOCIETY. Edited by A. REEVES JACKSON, A. M., M. D. 1 vol., 360 pp. Price, $2.00. Wm. B. Keen, Cooke & Co., publishers, Chicago, 1874.

The publication of a work of this character in large cities seems not alone desirable, but a real necessity, which is especially felt by a profession constantly called upon for strict observance of a code of ethics. We had hoped to make some complimentary remarks about this work, but, on reviewing it closely, find it wanting in so many particulars, regarding correctness, etc., that the least we say about it the better. As an illustration of what we have just stated, we will cite the list of druggists as published. The list is headed, "PHARMACISTS of Chicago, who are graduates in pharmacy or medicine (?) or members of some pharmaceutical association." The list comprises 112 names as coming up to the standard adopted by the CHICAGO MEDICO-HISTORICAL SOCIETY, out of some 300 to 400 pharmacists in this city, who are all, in our opinion, as much entitled to appear in this list as some 59 of the 112 reported. The 59 are neither graduates in pharmacy or members of any pharmaceutical association. We have also noticed that no less than five graduates of pharmacy, hailing from the Chicago and Philadelphia colleges, are omitted. We also take the liberty of asking the CHICAGO MEDICO-HISTORICAL SOCIETY, what constitutes a graduate of medicine a competent pharmacist? If it is his graduation, is not the diploma of the graduate of pharmacy evidence of his qualification to practice medicine? We only ask for information, as we are strong believers in the crude old saying, "What is sauce for the goose, is sauce for the gander."

In all earnestness we would advise this Society, that whenever they publish another edition of this directory, they omit the list of pharmacists, and we will not feel slighted thereat.

We trust the list of physicians is more accurately rendered, although, in this respect, we have heard much which we consider *unjust* fault-finding by members of the MEDICO-HISTORICAL SOCIETY. This is principally directed against the editor and the committee of publication, who gave their time and labor gratuitously for the purpose of carrying out the instructions as given by the Society for the publication of the work. The Society delegated no power to the editor or the committee to revise or correct the lists, but performed this work itself in open meeting, and any one familiar with work of this character knows well that it cannot be done satisfactorily in such a manner. Therefore, our advice to the grumblers is to eat the porridge, although the flavor may be disagreeable and the spice extra hot, by the extra assessment to defray the necessary expenses of the publication.

If the Society aspires to further glory, in publishing future editions of this book, we hope that they profit by the past experience, and endow the editor and publishing committee with full power for its publication, and we will prophesy a more satisfactory work than the present.

Proceedings of the American Pharmaceutical Association, at the twenty-second annual meeting, held in the city of Louisville, Ky., September, 1874. 1 vol., 666 pp. Price, $5.50, bound. Philadelphia, 1875.

We are in receipt of an early copy of this annual volume as we are going to press, and, therefore, can give but a brief notice of it in this number of the PHARMACIST. The present volume compares favorably, in size and contents, with that of last year, which is due to the full report on the Progress of Pharmacy, taking up nearly half the volume. The arrangement of the matter is somewhat changed from former editions, the reports of committee coming first, then follow the answers to queries, and last the transactions of the sessions of the meeting. An attractive as well as instructive feature is, the illustrations of apparatus noticed in the report on the Progress of Pharmacy. We hope this may be continued and enlarged upon in future editions, if the additional expense which naturally is incurred thereby can be met by the Association without a too great drain on its treasury.

We will, when time permits, refer to some other items connected with the present volume.

The Chemist's and Druggist's Diary, 1875.

Our London contemporary, *The Chemist and Druggist,* is fully alive to the wants of the trade, and in presenting their subscribers, *gratis,* with this useful annual publication, exhibit a spirit of liberality towards their patrons which certainly is appreciated, and can not but aid in the prosperity of the journal.

The only improvement that has suggested itself to us, in glancing hastily over the arrangement and contents of the diary, was, that the space allotted to "Miscellaneous Addresses" be increased to a half or a whole page for each letter of the alphabet, and made into a ledger index, to be placed previous to the calendar. This arrangement will be useful for keeping a record of names of persons, and their addresses, of which a memorandum may be wished to be kept throughout the year.

THE PHARMACIST.

VOL. VIII. CHICAGO, MARCH, 1875. No. 3.

THE REVISION OF OUR NATIONAL PHARMACOPŒIA.

BY E. H. SARGENT.

In the January number of the *American Journal of Pharmacy*, Mr. Moore suggests some useful changes in the method of revision of the *Pharmacopœia;* and as this subject is one of very general interest, we venture to add our own ideas of the manner in which the revision should be made.

The American Pharmaceutical Association has adopted a new plan for the organization of its permanent committee on the *Pharmacopœia*, which is now composed of one member from each college and association represented in that body. It was supposed that the representative of each college would, at home, act as the chairman of a similar *local* committee, and thereby give a healthy impetus to a preliminary revision by each college during the interval of our decennial revisions.

This being assumed as accomplished by each college and association, we will have at the next decennial revision, in 1880, not less than fifteen reports fully prepared for inspection and ultimate revision by the national committee, containing the combined thought and investigation of a large number of competent critics, and representing the local needs of each section of the country.

By this plan we secure deliberate and varied suggestions, founded upon actual experience. As pharmacists are properly the best judges of the utility and practicability of the formulas adopted for chemical and galenical preparations, and therefore the best fitted to prescribe them, it follows, naturally, that this portion of the revision should be left in their hands. Physicians certainly are better qualified than others to name the remedies they need, and also to indicate the form in which the remedy can best be used, (as fluid extracts, tinctures, or syrups, and whether compound or simple,) therefore they should give this part of the revision their attention. This preliminary work can be done previous to the time for the national revision, by each medical and pharmaceutical society, and the results be reported to the national convention.

When this point has been reached, the ultimate revision becomes an easier and more satisfactory performance by the division of the work in a similar manner. The physicians, in convention, may appoint a committee for final revision, satisfactory to themselves, who shall indicate the remedies and preparations they desire. Another committee, to be appointed by the pharmacists in the convention, shall prepare formulas for the preparation of the remedies indicated; and when this is accomplished, a sub-committee from each board can be appointed to superintend the publication in one of our large cities. By this division and co-operation the *Pharmacopœia* would represent the combined wisdom and experience of our best men; and each profession would have all the voice in its construction to which it is entitled, without clashing, or the danger of hurting the professional pride of either. If, in the selection of the committees for final revision, only such men are placed on either as are known to feel a lively interest in the work, and are qualified for its execution, we see no reason to doubt that a model *Pharmacopœia* would result, and that it would be published without a delay of from two to three years, as formerly.

Pharmacists have hitherto shown but little interest in the work of revision, although it is for their especial benefit, as they are almost the only persons who use the *Pharmacopœia.* A very limited number of prominent pharmacists have heretofore attended the conventions, and several of the colleges of pharmacy had no delegation in the convention of 1870.

As the convention is a "mixed commission," supposed to represent all the incorporated medical and pharmaceutical schools of the United States, it follows that, in the absence of pharmacists, the physicians are obliged to exercise their own judgment in the laying out of the work; and if, in consequence, pharmacy is ignored, none is to blame but the pharmacists. The result will be the same if the pharmacists are in a minority, "where noses count," and the medical gentlemen prefer to exercise control of a matter of which they are incompetent judges.

It is not too soon for the colleges of pharmacy to take active measures for the next revision. Original investigation of every kind can be better made previous to 1880 than later; and if each college would cause to be published, during the interval, such suggestions as they may deem pertinent, much valuable time will be saved, and the needful facts be ascertained for a proper discrimination when the time arrives for the final revision by a committee.

At the proper moment, we hope each college and association of pharmacists entitled to take part, will appoint delegates and see to it that they are present in the convention; for in no other way can we expect to see a better or more satisfactory result than we have in our present *Pharmacopœia.*

In relation to the scope of our national codex, we fail to see why any remedy in common use should be omitted, even if the insertion of all necessitates a few more pages. Neither can we appreciate the objections urged to the introduction of formulas for elixirs and other compounds, which are extensively used in all parts of the country. If physicians find such compounds useful, they will continue to demand them; it is therefore both right and proper that formulas be published by some authority, to enable pharmacists to dispense uniform products, and at the same time put an end to the almost endless list of manufacturers, who produce and advertise these special compounds, which burden the pharmacist, and being proprietary the expense to the consumer is doubled.

The advantage of prizes we think too remote to bring about any improvement, even if any body had authority to offer them. The best men and most faithful workers don't need the stimulus of money to give freely of that which they have received freely. Men of the professional standing of Squibb, Procter, Parrish and Maisch, have ever given freely of their knowledge to aid others; and if we have *latent talent* needing the use of money to call it forth, we fear it will prove of a variety not worth purchasing.

What seems *more* necessary to develop our latent strength is use; to secure this we need organized effort on the part of pharmacists *at home*, in their local meetings, where each may inspire his neighbor to greater effort, and by comparison of results lead to the best attainable information. One great advantage would come in revision from the presentation of finished products constructed by the formulas submitted, thereby enabling the revision committee to see the practical value of each suggestion without the delay of proving each one by experiments. These hurried suggestions are offered with the hope that others more competent may be able to perfect a plan by which the next revision of our *Pharmacopœia* may be made satisfactory to all who have occasion to use it.

A NON-POISONOUS RAT EXTERMINATOR.

BY J. H. SCHULZ.

Various are the methods resorted to for the extermination of rats, mice and other loathsome vermin. Among those generally employed are arsenic, strychnia, phosphorus, and other deadly poisonous substances, the use of which frequently causes the accidental destruction of human life.

In consideration of the danger which generally accompanies the employment of these fatal elements, the public have in vain tried the numerous mechanical devices with which to serve a "habeas corpus" upon these tormenting creatures; but they, being a "crafty set,"—due, no doubt, to the unusual development of that phrenological "bump," *cautiousness*, frustrate, to a great extent, all the allurements and devices which human ingenuity has thus far developed to ensnare them.

It is well known that rats are exceedingly fond of *fried fats and meats;* these delicious morsels they devour with extreme voracity. Based upon this fact, a new dish in the shape of *fried sponge* has been devised, with which to "feast" these unwelcome guests whenever they pay us a visit. This new dish of the *cuisine* is readily prepared, by taking common slate or reef sponge, cutting it into slices and frying it with bacon, lard or butter. These savors need not be of the choicest quality, as the tastes of those for whom it is intended have not yet reached the cultivation of the dainty epicurean.

The only point necessary to be observed in performing this culinary manipulation, is that too great a heat be avoided, as thereby the sponge becomes scorched and friable, losing its power of absorption, upon which its virtues as an annihilator of rats depend.

When properly prepared, and distributed in places where vermin frequent, there will be a sufficient number of guests, who greedily partake of this inviting meal. Soon after the fried sponge reaches the organs of digestion, its work of destruction commences, by absorbing the fluids, and thereby expanding and swelling to a size which will prevent its ejectment from the stomach and intestines, and the ultimate termination will be death.

The only objection that can be raised against this style of hospitality is that of "cruelty to animals." (?)

CRITICISMS.

> "For fools rush in where angels fear to tread."
> —"*Reformer,*" *Pharmacist, February,* 1875.

However true the above may be, yet there are many who do not hesitate to travel that well-trodden path, though their open eyes see the fool's clothes made for their wear, as by order.

Your correspondent thinks somewhat of his own tailor whilst he tries to write—write a criticism upon the February number of the PHARMACIST, the journal which, from its first number to the last, has been a constant source not alone of learning but of actual pleasure to him; but that "Reformer" has done it—the fates want their prey. "Homeopathy versus Allopathy." We object to that title; it should read "Nonsense versus Common Sense," or a short discourse of sense engaged in finding out the mote in your neighbor's eye. "Reformer" knows what he is about when he speaks of the very low literary attainments of some medical students who, after they have been in practice ten years (the writer speaks of facts), prescribe Ayer's pills because they are not able to write a prescription for Pil. Cathartic. Comp. But that he, the "Reformer," should speak of farmers, smiths and mechanics in such a way is unpardonable and asks for criticism. One of our own honored professors held the plow even at the age of twenty-eight, yet to-day he is honored here and abroad. And where do "little pills" come from? From Yale and Harvard? Do they? What a pity that these *optissimi* should have never read the parable of the talents! How they do use the pounds given to them! The *ten* ignorami we do meet among a hundred of old school students by their daring prescriptions *may* do harm; but we say may, for their conscience may instinctively lead them into the ways of "little pills." And as for them, ninety-nine out of a hundred neglect by their remedies (derived from the theory that God made the world of nothing) to assist nature to correct functional derivations or cure disorders as they meet them, when prompt interference would have saved the sufferer. If "Reformer" is a homeopathist let him demonstrate the good in his "ism" before he applies that good as a corrector to others.

He cannot be a druggist, well educated, for then he would not attempt to herald forth the assumption that "little pills" compelled old school doctors to leave off prescribing their nauseous doses. We prefer to credit the chemist and the pharmacist with the advance in the mode of prescribing, not the doctor; whence, then, the improving influence of "little pills?"

What would the writer have thought, in common with the others, of "Reformer" if he had seen the beam in his own eye? He would have taken him to be a reformer indeed. For, correct your own household and you will not only advance in the estimation of your right hand neighbor, but even the one to your left will, in consequence of the qualities inherited from his anthropoid great-grandfather, imitate you, and, of course, improve on his bad habits—he will be reformed.

What if Reformer had taken up the report of John F. Hancock, chairman of the Committee on Elixirs and Unofficial Formulas, would he not have looked with astonishment upon the formula for ointment of red oxide of mercury? What did the compilers of that formula mean by giving directions to prepare such a worthless compound? Simply because it would keep? So will a mixture of fire and brimstone (we being told so), and with the same ultimate benefit. Did the proposer of that formula never read the U. S. Dispensatory? He seems not. This book reads, under article "Oleum Ricini," as follows: "Though apt to become rancid by itself, it loses much of this susceptibility when mixed with lard; and some apothecaries are said to use it as substitute for olive oil in unguents and cerates. *But the slightly irritating properties of even the mildest castor oil render it unfit for those preparations which are intended to alleviate irritation.*"

So also say observers in different journals. And that same Oil is recommended as body for a salve which near and far is used for highly irritated conditions of the eye—nay, even for inflammation of its parts.

Is it not highly deplorable that large bodies of truly scientific men, for the sake of commodity, should set aside not alone therapeutic science but even the common parts of Materia Medica, the physical properties of the agents, which they, the druggists, prepare for the use of the physician? I ask leave to suggest a substitute for that formula:

UNGUENTUM HYDRARGYRI OXIDI RUBRI.

℞ Hydrargyri oxid. rubr. ʒi.
Olei Theobromae.
Ol. Amygdal. dulc, aa q. s. ad ℥i.

The oil of sweet almonds to be increased according to climate and circumstances. Directions: Melt the Cocoa butter with the oil; then add very slowly the mercury, powdered very fine, constantly stirring the fluid with a glass rod; then remove from water-bath and stir till cold.

I doubt not that this preparation will keep; its elegance, also its unirritating qualities, in conjunction with the ease with which it melts at the temperature of the skin, will recommend it highly as a remedy in those disorders in which the ointment is generally used.

For the formula on the ointment of oxide of zinc benzoated I offer the following:

UNGUENTUM ZINCI OXIDI.

℞ Zincii oxidi grs lxxx.
Olei Amygdal dulc.
Cerae albae aa q. s. ad ℥i.
Tinct. Benzoe simpilcis ʒi.

Melt the wax in the oil, *then add the tincture of benzoin,* and stir till the alcohol is evaporated; then add, slowly and in very fine powder, the zinc; remove the mixture from the bath and stir till cold.

This preparation keeps, and is so elegant that a physician who had to use it on himself could not get it in any of the better drug stores of Chicago to even compare with this preparation; and, though not wishing to assume too much upon my time, he was compelled to return and get me to make it for him.

Should these remarks cause the pharmacists to look a little more carefully into their Materia Medica before they compound and offer for use medicaments, I would have received pay in full for my endeavors. At the same time I assert, with the editor of the PHARMACIST, that true reform begins from "within;" for,

> "The heart, not the mouth, must the oracle be."

And if I apply to myself the heading of this short note, "For fools rush," etc., it is to be taken in regard to my audacity in criticising any thing appearing in the PHARMACIST.

We claim a good deal of sweeping to be necessary before our own door; medical colleges and societies are busily engaged manufacturing brooms for our use, and in handling them we have no time to look around and cry, You are another!

A. S. v. MANSFELDE, M. D.

EXAMINATION OF CITRATE OF MAGNESIUM AND EFFERVESCENT CITRATES AND TARTRATES.

BY WILLIAM SCHRAGE, OF SHEBOYGAN, WIS.

1. *Quantitative determination of Citric Acid, and Tartaric Acid, alone or in presence of each other, or of Sulphuric Acid, or Sugar.*—It may be premised that the determination of magnesia, potassa, soda, sulphuric acid and carbonic anhydride—qualitative and quantitative—may be readily made according to the directions of ordinary manuals of qualitative and quantitative analysis. For the bases, the water solution of the material is slightly acidulated with acetic acid, and boiled to expel all carbonic acid. For the flame colors of the alkalies the organic portion must first be burned out. Magnesium is precipitated as ammonio-phosphate and weighed as pyrophosphate. Sodium, in absence of potassium, may be weighed as sulphate; but if magnesium is present, it must first be removed by baryta solution, the baryta being then removed as sulphate. If soda and potassa, both are to be estimated, they must first be obtained (and weighed together) as chlorides, and to this end, if sulphates are present (as from removal of magnesium), the sulphuric acid must first be all removed by baryta solution and the excess of baryta by carbonic anhydride. From the potassic and sodic chlorides the potassic chloride is then taken out with platinic chloride and alcohol. For the qualitative determination of citric and tartaric acids, if sulphates are present, the sulphuric acid should first be removed. This may be done by adding silver nitrate in dilute solution in the cold: the precipitate (citrate,

tartrate) being washed on a filter with several small portions of distilled water. (A portion is soluble in nitric acid; not chloride.) If sugar be not present, tartrate may be identified by the blackening when heated. In presence of sugar, the precipitate should be decomposed by hydrosulphuric acid gas, and the silver sulphide filtered out. The filtrate is now neutralized with potassa, and calcium chloride is added: a precipitate in the cold indicates tartaric acid. The mixture (or the filtrate) is boiled; a resulting precipitate indicates citric acid. These precipitates are now treated with cold concentrated potassa solution; a solution, gelatinous when boiled and liquid when again cold, indicates tartaric acid; non-solution indicates citric acid, the precipitate being soluble in cupric chloride solution.

Estimation of Citric Acid in absence of Sulphuric and Tartaric Acids.—*a.* As calcium citrate. Neutralize the solution; add sufficient calcium chloride solution; boil for some time (to change the precipitate from the amorphous to the crystalline state), collect on a tared filter; wash; dry at 120° to 150° C. (248° to 302° F.) and weigh. $Ca_3 (C_6H_5O_7)_2 : 2H_3 C_6H_5O_7 : : 1 : 0{\cdot}77108$, or $Ca_3(C_6H_5O_7)_2 : 2H_3C_6H_5O_7H_2O : : 1 : 0{\cdot}84337$.

b. By precipitation as barium citrate, from barium acetate, in alcohol of 60 to 95 per cent., for weighing as barium sulphate.—J. CREUSE: *Am. Jour. Phar.*, xliii. (1871), 537.

If sulphates are present, the sulphuric acid should be determined by precipitation with barium chloride in presence of hydrochloric acid, and the resulting barium sulphate deducted from the total barium sulphate obtained according to the preceding paragraph.

Estimation of Tartaric Acid in absence of Sulphuric and Citric Acid, (*and other Acids forming insoluble Lead Salts*).—Ammonium salts should not be present. *a.* The solution, very slightly acidulated with acetic acid, is precipitated with lead acetate solution, and the precipitate is washed on a tared filter with dilute alcohol, and dried on the water-bath. $PbC_4H_4O_6 : H_2C_4H_4O_6 : : 1 : 0{\cdot}422535$.

If sulphates are present, the sulphuric acid should be estimated by itself, and its equivalent quantity of lead sulphate deducted from the weight obtained according to the preceding paragraph.

b. Tartaric acid may also be determined as a calcium salt. For this purpose the neutral solution is treated with chloride of calcium in slight excess, the mixture boiled and set aside for twenty-four hours. The precipitate is then washed on a tared filter, with a little water and much dilute alcohol, dried at 40° to 50° C., and weighed. $CaC_4H_4O_6 4H_2O : H_2C_4H_4O_6 : : 1 : 0{\cdot}577$.

Estimation of Tartaric Acid in presence of Citric Acid.—This is an especially difficult separation, and the results by the following method are only approximate. The concentrated solution is made nearly neutral, but slightly acid, with acetic acid. Alcohol is added short of precipitation, and then concentrated solution of potassium acetate in slight excess. The precipitate is washed with alcohol, on a tared filter, and dried on a water-bath. $KHC_4H_4O_6 : H_2C_4H_4O_6 : : 1 : 0{\cdot}797$. Sulphates do not interfere; but if they preponderate, the first washing of the precipitate should be with dilute alcohol, and, after weighing, the precipitate should be found free from sulphates.

Estimation of Citric Acid in presence of Tartaric Acid.—Obtain the calcium precipitate by the directions for tartaric acid alone, *b* (drying at about 50° C.). With another portion of the material find the amount of tartaric acid from the hydric potassic tartrate, according to the preceding paragraph. Calculate the equivalent calcium tartrate: $H_2C_4H_4O_6$: $CaC_4H_4O_64H_2O$: : 1 : 1·733. Subtract this from the weight of the calcium-tartrate and citrate-precipitate obtained, and from the remainder, as $Ca_3(C_6H_5O_7)_22H_2O$, calculate the citric acid.

The foregoing methods have been gathered from various authors, in current works, and the writer has merely succeeded in verifying them, as giving (except for separation of citric from tartric acid) close results. I have also tried the separation of citric from tartric acid, as calcium salts, by solubility of the calcium salt in potassa solution, with the following (unsatisfactory) results:

Took 0·450 gram of tartaric acid and 0·630 gram of (crystallized) citric acid, dissolved in water; added ammonia to a very slight alkaline reaction, and then calcium chloride in excess, boiling the precipitate for a long time. Washed thoroughly, on a filter, with hot water; the washings continuing to contain calcium. Treated thoroughly with solution of potassa, and washed the residue on a tared filter, and dried below 100° C. The weight of the precipitate, 1·030 gram, as the hydrated calcium citrate, $Ca_3(C_6H_5O_7)_2 2H_2O$, corresponds to 0·810 gram of crystallized citric acid, being 0·180 gram more than was taken—an increase of 28 per cent.

2. *Analyses of a few Citrates and Tartrates in Market.*—1. H. W. Swift & Bro. "Effervescing Citrate of Magnesia."—Qualitative: Sodium, carbonic *anhydryde*, tartaric acid, sugar, a trace of sulphuric acid. No magnesium or citric acid. Quantitative, from 1 gram: lead tartrate, 0·970 gram, equivalent to 0·410 of tartaric acid; sodium sulphate, 0·372, equivalent to 0·277 of anhydrous sodium carbonate; carbonic anhydride, 0·050. As 0·277 of dry sodium carbonate furnishes 0·105 of carbonic anhydride, it follows that $\frac{55}{105}$ of the sodium has become tartrate during and after manufacture. The article as purchased then stands very nearly as follows:

Sodium carbonate,	0·132	representing	Sodium carbonate,	0·277
Sodium tartrate,	0·268		Tartaric acid,	0·410
Tartaric acid,	0·205			
Sulphuric acid (a trace), Sugar, water, etc.,	0.398			
	1·000			

(0·277 of sodium carbonate would neutralize 0·392 of tartaric acid; hence the analysis shows an excess of only 0·018 of acid,or four per cent. of the whole).

2. Nichols & Co., "Effervescing Citrate of Magnesia."—Qualitative: Magnesium, sodium, sulphuric acid, tartaric acid, carbonic anhydride,

sugar. The results of the quantitative work, placed in the form in which the ingredients were probably taken, were as follows:

Magnesium sulphate (anhydrous),	0·122
Sodium carbonate (dried)	0·242
Tartaric acid,	0·430
Sugar, water, etc.,	0·206
	1·000

(The carbonic anhydride was not determined, and 0·342 of sodium bicarbonate may have been used instead of the 0·242 of normal carbonate, leaving 0·106 of sugar, etc. The tartaric acid is 0·038, or nearly nine per cent. in excess of that required to neutralize the sodium).

3. Billings, Clapp & Co., "Magnesia Aperient."—Qualitative: Magnesium sulphate, sodium carbonate or bicarbonate, potassium (bicarbonate or sodio tartrate?), tartaric acid, sugar.

4. W. J. Gordon's "Citrate of Magnesia."—A neutral magnesium citrate, dissolving with difficulty (not effervescing).

5. Tarrant's "Effervescing Seltzer Aperient."—Qualitative: Magnesium sulphate, sodium bicarbonate, potassium bicarbonate, tartaric acid, sugar.

6. Chas. Ellis & Co., "Prepared Citrate of Magnesia."—Qualitative: Magnesium citrate, sodium bicarbonate, potassium salt (a trace), citric acid, sugar.—*American Journal of Pharmacy.*

HOME-MADE CHEMICALS.

BY JAMES R. MERCEIN.

While deeply regretting that the imperative calls of business will prevent my attendance at the present meeting of the American Pharmaceutical Association, I have ventured to send a few representatives in my place, who will do their best to speak for me.

It has long been a deep-rooted belief of mine, a belief that time and experience have strengthened, that pharmacists should make for themselves many articles they now depend upon manufacturing chemists to supply. Apart from any other aspect of the case, it has always seemed to me that this branch of our profession possesses a fascination and an interest that go far towards alleviating the confining cares of our arduous business. The multitude of petty details, the annoyance of exacting customers, the wonderful stupidity of the average shop-boy, the long hours of work—all these need a compensating remedy, which should and can be found in the mysteries of pharmaceutical chemistry, in the triumph of mind over matter as embodied in the various processes by which the finer chemicals are produced. To point this moral, I have sent for exhibition a few samples of what I shall term home-made chemicals, made in strict accordance with the United States Pharmacopœia. They are not shown as anything wonderful, simply as fair specimens of what any pharmacist, with the ordinary apparatus in daily use, should readily make. But they *are* shown as productions which pharmacists generally do *not* make, or which they do not think of making. And why not? Are we, who are members of what we call a profession, and not a trade, are we to be merely buyers and sellers of drugs and chemicals, mere "hewers of wood and drawers of water," content to take on trust as to purity, price and correctness anything our wholesale friends may see fit to send us? Are we to content ourselves with making only the ordinary syrups, tinctures and ointments for every-day calls—mere routine work—and are we never to endeavor to walk in the higher paths of our profession, where the knowledge we may have acquired from our schools and colleges of pharmacy, our text-books and our brains, may be brought into use? We need not expect, nor do we need, to compete with large manufacturers in the making of numberless things. We would be at a loss without these gentlemen, and it would be worse than useless to attempt the manufacture of those products requiring skilled labor, expensive apparatus and large capital; but there are many articles that can be so readily made at home, with the ordinary appliances found in any good pharmacy, and I urge this for three reasons:

1st. For the sake of economy.
2d. For skill in manipulation.
3d. For the benefit of our assistants.

If we can make red iodide of mercury for thirty cents an ounce, when it costs us fifty cents to buy it, or ergotin for thirty-five cents, when the price current is sixty cents; in short, if we can save from twenty-five to fifty per cent., why not do so? We need not count the time spent as part of the cost of production, for there are always spare moments we can devote to this work, odds and ends of time otherwise wasted. As to the additional skill acquired in manipulation, "experentia docet," none of us know *too* much.

As to the benefit our assistants will derive from laboratory work, it is incalculable; it acts as a two-edged sword, cutting both ways, helping *them* to knowledge for their future career, giving *us* skilled labor and present pecuniary benefit.—*Proceedings American Pharmaceutical Association*, 1874.

PREPARATION OF COLORLESS CRYSTALLIZED CARBOLIC ACID.

Dr. H. Schnitzler, in a recent number of *Dingler's Journal*, gives the following description of the method employed by him in the manufacture of a fine quality of carbolic acid:

Black and muddy carbolate of soda, as it is called, is heated in a copper still, over a hot fire, until the distillate which goes over begins to look milky; 15 kilos. require about ten hours. The distillate contains water, naphtalin, tar oils, and some carbolic acid. The principal quantity of carbolic acid, however, is combined with the soda, and remains in the retort, and, on cooling, becomes solid. The maximum temperature of the vapor was 338° F., the temperature of the liquid was not measured, but must have been considerably higher. The mass was dissolved in water and diluted to about three times its original volume. In few days a sediment had been deposited, and a sample of the clear solution was rendered milky by water. The acid was liberated from the soda in the solution by dilute sulphuric acid, and distilled off in a glass retort. After putting aside the water which went over first, a colorless liquid carbolic acid was obtained, having the odor of honey. It solidified in a few minutes, on dropping into it a fragment of chloride of calcium or of crystallized carbolic acid, and the crystalline mass seemed only moist. The portion which went over last had more liquid in it, and was slightly yellow. The crystals were dried without loss by a Bunsen (Sprengel?) pump, the air being dried and purified by passing through chloride of calcium and cotton wool. The dry crystals were pressed between paper, and remained white for months in a well-closed glass vessel, exposed to diffused sunlight. In open glasses the crystals soon acquire a pink color, and finally dissolve to a yellowish red liquid. This indicates that the change is produced by the particles of dust in the air. Placed upon paper in the sun, the crystals soon disappear without leaving a trace behind, showing that they evaporate readily in dry weather.

On a large scale this distillation could be performed in a wrought-iron still, with tin, or perhaps lead or copper, worm. In neutralizing the soda with hydrochloric acid great care must be taken, for, if any iron or copper goes into solution, it would change the color of the acid. When the carbolate of soda is not sufficiently heated, the acid has an unpleasant odor and a yellow color.

Even when there is a large quantity of the higher liquid phenols present a large part of the crystallizable phenol can be obtained in this way, either with or without previous partial precipitation. The supposition that small quantities of the liquid phenols can permanently prevent crystallization seems to be mere guess work; they only keep liquid the portion that they are able to dissolve.

The essential portion of this method consists in removing, by rendering insoluble or by carbonizing, those impurities that could afterward produce discoloration.

An experiment with carbolate of lime, containing an excess of lime, yielded an anfavorable result, for the mass became spongy, and hence a bad conductor of heat, so that the upper portion held back tarry constituents and was full of naphthalin crystals. Perhaps this was due to the excess of lime.—*Journal of Applied Chemistry.*

AN ANCIENT METRIC SYSTEM.

The library of Asshurbanipal, King of Assyria, found during Mr. Layard's excavations at Nineveh, shows that Science had made no little progress in Asia twenty-five hundred years ago. This curious library consisted of flat, square tablets of baked clay, having on each side a page of closely written cuneiform cursive letters, which had been impressed on the clay while it was yet moist. The great majority of these tablets are now in the British Museum, and have been found to contain the remains of an immense grammatical encyclopædia. There are also fragments of many mathematical and astronomical treatises, with catalogues of observations, tables, calculations of eclipses of the moon, and observations of solar eclipses, the earliest of which occurred nearly a thousand years before the beginning of the Christian era. There are also fragments of law books and legal records, books of chronology, manuals of history, accounts of Assyrian and other divinities, collections of hymns in the style of the Psalms of David, a geographical encyclopædia, works on natural history containing lists of plants and animals, of timber trees employed in building and furnishing, of stones fit for architecture and sculpture, etc. Perhaps the most interesting of all these lists is a classified catalogue of every species of animals known to the Assyrians, showing a scientific nomenclature similar in principle to that of Linnæus. Opposite the common name of each animal is placed a scientific and ideographic name, composed of two parts, a family name and a characteristic epithet denoting the species.

A still more remarkable indication of the scientific advancement of the ancient Assyrians appears in their system of weights and measures, in which, as in the French system, all the units of surface, capacity and weight were derived from one typical linear unit. The basis of the system was the cubit (equal to 20·67 inches). This was divided into sixty parts, corresponding with the minutes of the degree. The cubit, mutiplied by 360, the number of degrees in the circle, produced the stade, the unit for large distances. The fundamental unit for areas was the square foot, the square of a measure bearing to the cubit the relation of 3 to 5, or 12·4 inches of our measure. The cube of the foot was the metreta, the standard of all measures of capacity; and the weight of a cubic foot of water gave the talent, the fundamental unit of weight; the sexagesimal division of the talent gave, first the mina (=510·83 grains), and second, the drachma (=8·51 grains).

The sexagesimal system was employed throughout their mathematics, the unit being invariably multiplied or divided by sixty, the result again by sixty, and so on to infinity. "This, it is very evident," observes Lenormant, "was the result of a wise combination of a very practical character, intended to combine the advantages of the two systems of dividing unity that have been in dispute at all times and among all nations—the decimal and the duodecimal." We still follow this Chaldæo-Assyrian system in the divisions of the circle and in our divisions of time.—*Scientific American.*

BROMIDE OF AMMONIUM.

BY W. H. PILE, M. D.

In looking over the various formulas, published from time to time, for making bromide of ammonium, I have met with none, in my opinion, that can be so readily followed as that in which the direct union of bromine and ammonia is taken advantage of. The formula of the United States Pharmacopœia is certainly the most ineligible and uncertain in its results. The fact which I allude to, of bromide of ammonium resulting from the union of bromine with ammonia, has been observed in most chemical works, but the reaction is so exceedingly violent that this method appears not to have been followed up by any one.

A few years ago, by cautiously experimenting in this direction, at the risk of being suffocated and causing a general stampede of all in the house, I finally arranged a method which I have followed ever since.

When bromine is poured into liquor ammonia f. f. f. an explosive reaction occurs, with a tremendous evolution of nitrogen and gaseous bromine, making a most unpleasant and dangerous experiment; but by reversing the proceeding, protecting the bromine from the sudden contact with the ammonia, by means of a large volume of water, and adding the ammonia gradually, the action is completely under control, and scarcely any bromine is liberated. The method I have pursued is as follows: Into a tall five-gallon stone jar pour in about one-half gallon distilled water, and then, by means of a long glass funnel reaching down to the bottom, pour in carefully one pound of bromine; then, by small portions at a time, add liquor ammonia f. f. f. A brisk effervescence soon commences; cover the top of the jar with a glass plate when the vapors rise near the top, and add two or three ounces more ammonia when it subsides. The jar gradually becomes warm, which increases the action within; set the jar in cold water, if necessary, until the action moderates. By thus proceeding, in less than an hour, and with the addition in all of about one quart of liquor ammonia, all the bromine will have disappeared, and the solution becomes completely colorless and free from the odor of bromine, although smelling of ammonia. It will not need filtering, and requires nothing further than evaporation to complete dryness, stirring constantly towards the end. The salt produced in this manner is perfectly white, does not change color by keeping, answers all the tests of the Pharmacopœia, and will amount to about twenty ounces in weight.—*Proceedings Am. Pharm. Association*, 1874.

NOTE ON A SPURIOUS SENNA.*

BY E. M. HOLMES,

Curator of the Museum of the Pharmaceutical Society.

During the past month a drug has been offered for sale in London under the name of "fine senna," which evidently differs considerably in botanical characters from the true article, although in size and color somewhat resembling the Tinnevelly variety. Of this "fine senna" I was informed, when I received a sample, that two bales only were in London, although no less than the enormous quantity of two hundred tons was consigned to the agent here, and would probably arrive, before long, in this country. Hence it appeared probable that this senna might enter into commerce, and that its history and medicinal properties would therefore be worthy of investigation. With this view, I examined the few leaves and pods that were first received, and found that they were evidently the produce of a leguminous plant, possibly belonging to the genus *Cassia*, but, if so, certainly to a different section to that to which the officinal senna belongs. The genus *Cassia* being an extremely large one, I at once forwarded my specimen to Professor Oliver, who identified it as probably belonging to *Cassia brevipes*, D. C., a native of Costa Rica and Panama. A further supply of the leaves fortunately contained some flowers and young twigs, which were sufficient to enable me to confirm beyond a doubt Professor Oliver's opinion. The sub-genus *Chamæcrista*, to which this plant belongs, contains herbs and shrubby plants with pinnate leaves and conspicuous stipules, the flowers being either solitary in the axils of the leaves, or sometimes subfasciculate on a very short common peduncle. There are seventy-eight species in this sub-genus; but the small group of about nine, to which *Cassia brevipes* belongs, consists of plants which are so closely allied as to form an almost continuous series, the leaves being very similar throughout the group. Our plant is, however, distinguished from its congeners by its short, very hairy pod, with the hairs golden yellow and not appressed.

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* Read at an evening meeting of the Pharmaceutical Society of Great Britain, February 3, 1875.

The following is a description of the drug I have received: The twigs above mentioned have hairy stems, and the leaves are alternate, compound, with a very short petiole, bijugate, and the rachis ends in an extremely fine short hair-like point. The leaflets, which are so closely placed as to overlap each other, are entire, unequal at the base, about 1¼ inch long, somewhat elliptic in outline, the lower margin being less curved than the upper; they are mucronate at the apex. The most marked feature, however, consists in the venation. Three principal veins start from the base of the leaf, and diverging but slightly, proceed nearly to the apex of the leaf. Each of these three veins is branched in a pinnate manner at a very acute angle (about 7°), so that at a casual glance the leaf appears furcate-veined. The two lower leaflets on each leaf are smaller than the two upper ones. The pods are brownish, about twice as long as broad, and covered with yellowish erect hairs. The stipules are lanceolate, with a cordate base, and have numerous minute veins. The flowers are large and yellow, with rigid scarious sepals, and are solitary in the axils of the leaves.

Thinking it probable, since it belonged to the same genus, it might perhaps have the same purgative properties as senna, I made two infusions, one of *Cassia brevipes*, and the other of Tinnevelly senna, each in the proportions directed in the British Pharmacopœia for infusion of senna. In appearance the two infusions were exceedingly different, that of senna being of a rich brown, and the other scarcely darker than almond oil. Both were neutral to test paper, and with acetate of lead, tincture of galls, and solution of perchloride of iron gave similar precipitates, those from the *Cassia brevipes* being rather paler and more scanty than those from the Tinnevelley senna. The taste and odor of both were similar.

Having tried a quantity of infusion equal to ¼ of an ounce of the leaflets, I found it to be withont any effect whatever, while a similar quantity of infusion of Tinnevelly senna, acted as a decided purgative.

This experiment, however, only proved that *Cassia brevipes*, D.C., is not purgative in ¼ of an ounce doses. I therefore tried the effect of a quantity of its infusion equal to ½ an ounce of the leaves, but with the same result as before. Hence I conclude that this new variety of senna is useless as a purgative, and can by no means replace or enter into competition with the official senna, even if it should be offered at a much lower price; and that should it, hereafter, occur mixed with ordinary senna, it must be looked upon as an adulteration.

The President asked whether the senna described in the paper was already in the market.

Mr. Holmes replied that he understood two bales were in London, and were being offered for sale as fine senna.

The President said that that fact showed the importance of bringing such a subject as this immediately before the Society.

Professor Bentley said that a specimen of this senna had been given to him by one of his pupils, who had received it from a friend living in the country, but how the latter obtained it he was unable to learn. The specimen now described by Mr. Holmes was so unlike the real drug that he believed that not even a junior apprentice could be deceived. He thought that there must be some mistake when they were told that the enormous quantity of two hundred tons of this spurious senna was on its way to this country; for, supposing the number of pharmacists in this country was twenty thousand, it would allow twenty pounds to each. He did not recollect the quantity of Alexandrian senna annually imported, but the annual importation of East Indian or Arabian senna was only about one hundred tons—that is, one-half the quantity now stated to be on its road of the present spurious senna. Professor Bentley said that whoever contemplated sending or importing so large an amount must entertain a very strong opinion of the gullibility and ignorance of English pharmacists, and clearly had no idea how the study of botany had progressed since the establishment of the School of Pharmacy of the Pharmaceutical Society. The best mode of distinguishing the leaflets of the spurious senna from those of the official kinds was by the venation, as described by Mr. Holmes. He did not believe that any wholesale house would be deceived by this senna, and therefore he had no fear of its being sold to any extent in this country, in place of the ordinary varieties of senna. The only way in which any amount could be got rid of would be by mixing it with true senna; but even then it could be readily picked out. Professor Bentley suggested to Mr. Holmes that, as he had tried this senna and found it not to possess any marked purgative properties, whether it would not be better, to avoid any chance of its being used in place of senna, to describe it as "A New Substitution for Senna," rather than "A New Variety of Senna," which might mislead.

Mr. Holmes said that he had not been able to trace where the senna came from, but there were two bales of it in London. As to the two hundred tons, his information was that that quantity would be imported into London, and not that it had already arrived.

Mr. Hanbury said that he had taken a little trouble to find out whether the article which Mr. Holmes described was used for any purpose in any part of the world, but he had been unable to find any mention of its use.

Mr. Holmes said, with regard to the name, that he had called it a variety of senna because it belonged to the same genus.

ABSOLUTE PHENOL.—Mr. Moss called attention to a specimen of absolute phenol which was exhibited on the table. He said that it was stated to be absolutely pure carbolic acid, and that statement alone would be sufficient to make it interesting. But the chief points of interest with regard to it lay in its physical character. It was a very coarse powder, made up of very small white crystals, and it might be manipulated as easily as any ordinary crystalline powder, such as common table salt, for example. It was also said to be non-deliquescent, and he had kept it in paper for two or three weeks without finding any trace of dampness in it. Whether it was absolutely non-deliquescent he was unable to say. He thought it highly probable that the claims which had recently been made for using salicylic acid as an antiseptic dressing might be set aside in favor of this pulverulent and faintly fragrant carbolic acid. The chief claims of salicylic acid were its being a fine powder and having no smell.

Mr. Williams said that Mr. Moss had introduced the subject of salicylic acid, and that was a very important question just now, and was attracting a great deal of interest both in England and on the Continent. It was originally produced from salicyl, as its name indicated, and it was afterwards made from the oil of wintergreen. It had lately been discovered that it might be produced artificially from carbolic acid by the action of carbonic acid in the presence of sodium, or rather, as lately proved, in the presence of caustic soda in proper proportions and at a high temperature—that of 260 C. Half of the carbolic acid passed over, and the other half became converted into the salicylate of sodium. This compound was decomposed by an acid, and readily yielded salicylic acid. It was hoped that this substance would in time be produced cheaply and in abundance, and that it would be of great value. He had on the table a specimen of salicylate of methyl produced with artificial salicylic acid. This was not an imitation of the substance, but was the very substance itself. It was really the artificial oil of wintergreen. In this respect it differed from the artificial oil of almonds, for that substance had no chemical identity with the natural oil. This sample of salicylate of methyl was another example of the artificial production of a natural product. Mr. Williams then read a paper titled:

NOTE ON SALICYLATE OF METHYL.—The recent discovery, by Kolbe, of a method of producing salicylic acid by the combination of carbonic anhydride and hydride of phenyl (carbolic acid), in the presence of caustic soda at an elevated temperature, is not only one of the most interesting discoveries from its theoretical importance, but also for many practical reasons. As an antiseptic, the acid promises to be of great importance, and being free from unpleasant taste and quite devoid of smell, and, as far as we know, possessing no poisonous qualities, it will, probably, be employed for preserving meat, milk, etc., and possibly may be found possessed of valuable preservative properties which may be of value in pharmacy, *i. e.*, in the preservation of infusions, ointments, etc. Of course, much will depend upon the price at which it can be produced. At present, many practical difficulties in its manufacture have to be overcome, but when the process is better understood, and appropriate forms of apparatus have been devised for conducting the operation, it is expected that the acid will probably be produced at the cost of a few shillings per pound.

It has long been known that the essential oil of wintergreen (*Gaultheria procumbens*) consisted almost entirely of salicylate of methyl. In fact, until lately this oil was the best and cheapest source from which to prepare the acid. It is not much employed by English pharmacists, but in America it is a great favorite, many syrups and preparations of "elegant pharmacy" being flavored with it.

I have lately prepared some of the salicylate from the artificial acid, and find it quite identical in flavor with the natural oil. We thus have the curious fact that a product of the destructive distillation of coal and a product of the destructive distillation of wood combine together to form a natural product; another proof, perhaps, that the time must come when chemists will be able to prepare artificially such bodies as quinine, morphia or strychnia.

The salicylate of methyl is easily produced by mixing salicylic acid, pure wood spirit (or methyl alcohol) and sulphuric acid together in a retort, and distilling in an oil bath, the temperature required being about 208° Cent.

We may anticipate that it may shortly be produced at a much cheaper rate than the natural oil can be supplied at, and will probably find many uses as a scent in soap-making and perfumery, as well as pharmacy.

Mr. Sutton said that whilst on the Continent last year he met Professor Kolbe, whose name had been mentioned in connection with this subject, who told him that he had no doubt that by and by they should be able to reproduce by artificial means anything that could be brought forward as a natural product. Of course that was a very strong statement, but he was very glad to see that so far as they had already gone they had this evidence of its truth.—*London Pharm. Journal.*

SOME OLD CHEMICAL NAMES.

BY S. P. SHARPLES.

The popular nomenclature of chemical substances is often as puzzling to the chemist as the strictly scientific names are to the uninitiated. The popular name often contains a whole history, while the scientific name is but a bald statement of a single item in regard to the substance, that is, its chemical composition. Take the names that have been given, at various times, to hydrogen chloride, viz., hydrochloric acid, or chlorhydric acid, muriatic acid, spirit of salt; each of these names has a whole theory of chemistry in it. Even the two apparently similar names, hydrochloric and chlorhydric acid, conveyed a different idea in regard to the composition of the compound in question. Muriatic acid gives at once its derivation—that is, it is the acid produced from *murias* or sea salt. Spirits of salt refers us back to the alchemists and their theories. They claimed that all chemical substances were composed like man, of a spiritual and an earthy part. When sea salt was treated with sulphuric acid in a vessel connected with a suitable condenser, the earthy part remained and combined with the sulphuric acid, while the volatile or spiritual part passed over and was condensed.

The various names given in old works on chemistry to potassium carbonate furnish another illustration. These are lixiva, from the fact that it was obtained from the lixivation of ashes, alkali fixum vegetable, to distinguish it from alkali fixum fossile or soda. It was not then known that potassium was also found in the earth, and it was thought to be exclusively a vegetable production.

Dr. Black says, "It is produced in the plant by the powers of vegetation." Potash was so named from the fact that the lixivia was evaporated to dryness in pots. Sal tartar, because it was obtained by igniting the tartar of wine. Sal absynthii from the Latin name of wormwood, from which it was also obtained. Oleum tartare, from the fact that, when exposed to the air, it deliquesced and formed an oil-like liquid. It will be noticed that two different substances are spoken of in this last list. That potassa and potassium carbonate are apparently confounded with each other; such was actually the case until Dr. Black pointed out the circumstance that carbonates were rendered caustic by quicklime, because quicklime absorbed carbonic acid from them and became converted into carbonate of lime or chalk.

Sulphuric acid, besides its common name of oil of vitriol, was also called spirit of vitriol; oil, from its thick, oily appearance, and spirit because produced by distilling vitriol. It was also called spirit of alum.

Various explanations have been given of the name cream of tartar, and the general opinion seems to be that it is called cream from its white appearance. Dr. Black states, however, that the reason why it is called cream of tartar is that it was long procured by evaporation to a particle which was skimmed off like cream. Some of these old names, such as acid universal and primitive acid, which are both synonyms for sulphuric acid, have deservedly passed into oblivion, but some of them are still retained in commerce, and it seems right that they should be.

Potash serves to designate a crude, commercial product, made by evaporating to dryness the lye obtained by leaching the ashes of hard wood; pearl ash is the same article purified by redissolving and again evaporating, and they both differ from potassium hydrate, from the fact that, in additon to their containing other impurities, they are more or less carbonated.

Salt of tartar is nearly pure potassium carbonate, but it always contains more or less of the other salts contained in the crude material. Argols is the reddish crust deposited from wine. This is dissolved in hot water, filtered and crystallized, and then forms the crystals of tartar of commerce. This, when ground, gives us cream of tartar. Oil of vitriol is a crude, commercial sulphuric acid, of sp. gr. 1.85, while Nordhousen oil of vitrol is $H_2S_2O_7$ with some impurities which give it its dark color.

These old names almost necessarily designate an impure article, and are proper names for such articles. When modern Chemistry appeared upon the scene, with its improved apparatus and methods, and, above all, with the hypotheses that have rendered such great advances possible, it became a matter of necessity that some systematic nomenclature should be adopted. Hence, the so-called Lavoisierian system, which sprang into existence almost perfect from the start, and which has served our needs with but slight modifications to the present time. But these names are only adapted to the pure preparations made with great care in the laboratory; and it has always seemed to me a great mistake in some writers that, in their efforts after uniformity, they have altogether dropped these old designations for those which, while they are systematic and correctly designate the essential ingredients of the article, do not convey so good an idea of the article actually used as the commercial name.

It is a recognition of this fact that commercial articles are not those indicated by the chemical name or symbol that has brought into use the superfluous letters *C. P.*, so often attached to the end of a name. Sulphuric acid is simply H_2SO_4, neither more nor less, while oil of vitriol may contain any amount of impurities.—*Journal of Applied Chemistry.*

BENZOATE OF LITHIUM.

BY E. B. SHUTTLEWORTH.

This salt has been proposed as a remedy for certain disorders of the urinary organs, and appears to possess advantages over the forms in which lithium has heretofore been exhibited. The comparative insolubility of the carbonate has always proved a bar to its general employment, and though the citrate is in this respect much more eligible—only twenty-five parts of water being required for solution—yet the salt is of an unstable and deliquescent character, and somewhat troublesome to prepare and dispense. The benzoate is not open to any of these objections, and has the additional advantage of containing, in combination, an acid which is itself of no inconsiderable repute in the treatment of patients suffering from various forms of urinary deposits.

This salt is not usually to be met with in commerce, but is not difficult to prepare. I am not, however, aware of any work of reference which contains any directions, or formula, for this purpose; and am, therefore, induced to believe that a few remarks on the subject may prove acceptable.

Benzoate of lithium may be most advantageously prepared from the carbonate:

$$\underset{74}{\underline{L_2CO_3}}+\underset{244}{\underline{2HC_7H_5O_2}}=\underset{256}{\underline{2LC_7H_5O_2}}$$

In a wedgewood dish put one ounce (avoir.) of carbonate, mixed with nine ounces of water. Heat gently by aid of a spirit lamp, and add gradually, and by small portions, benzoic acid until effervescence is no longer produced. About three and a quarter ounces will be required. Evaporate to dryness, stirring constantly, and reducing the heat towards the close of the operation. The product may, for convenience, be powdered. The yield will be nearly three and a half ounces.

By following this process a much less quantity of water, and consequently less evaporation, will be needed than if the benzoic acid be dissolved and the carbonate added thereto. If, by reason of impurity or discoloration of the benzoic acid, it is necessary to filter the solution, three ounces more water may be added before evaporation; and, if required, a little purified animal charcoal may be used. The benzoate may be obtained in crystals by withdrawing the heat and setting the solution aside immediately after the benzoic acid is all added.

Watts* says the lithium salt of benzoic acid is uncrystallizable. This is incorrect; the benzoate may be crystallized without the slightest difficulty. It takes the form of glistening, pearly scales, or laminæ, somewhat resembles iodide of cadmium, but less lustrous. The crystals feel soapy or greasy to the touch; have a cool, sweetish, and not disagreeable taste, and are perfectly permanent in the air. The solution has an acid reaction.

I have found the salt to be soluble in three and a half parts of water at 60° F.; in two and a half parts at 212° F.; and in ten parts of cold alcohol, sp. gr. 838.—*Canadian Pharm. Jour.*

MIST. GENTIANÆ COMP.

BY CHARLES SYMES, PH. D.

This preparation, after having undergone some amount of transition, both in character and name, has become a comparatively popular medicine, being daily prescribed by many practitioners; it still, however, admits of some improvement.

In the P. L., 1851, it consisted of

Inf. Gentianæ Co.
Inf. Sennæ Co.
Tinct. Card. Co.

Banished in name from the B. P. of 1864, it existed there in composition as Infusum, not the old mixture, not the infusion of the P. L., but that of the U. S. Pharmacopœia, which in the present B. P. receives the name of Mist. Gentianæ Co.

Now there can be no objection to copying from the Pharmacopœias of other countries, either continental or transatlantic, but we certainly should show our discretion by avoiding their faults. When we copy Pulv. Glycyrrhizæ Co. from Prussia, we improve it into something which the bulk of the profession object to prescibe; but when we copy the U. S. Inf. Gent. Co., we take it, faults and all, even though dissatisfaction had been expressed concerning it in the country of its origin, and although some slight modification is introduced, it tends rather to increase than diminish its unsatisfactory appearance.

When this preparation has been kept a few days, it commences to throw down a flocculent pectic-like deposit, which floats near the bottom of the containing vessel; the upper half of the fluid might be poured off moderately clear, but the lower portion will be exceedingly turbid, unless it is filtered through paper, after which slow process it is too bright to correspond with the former, and thus two mixtures made with these portions, respectively, will have a somewhat different appearance. This, perhaps, is only a small difficulty, but one which causes frequent annoyance to the dispenser, and is quite worth surmounting. To do this satisfactorily, it is necessary to consider, first, the characters of the materials we have to deal with—gentian, orange-peel, coriander seeds, and, as menstrua or solvents, proof spirit and water. From the gentian we desire to extract the bitter principle soluble in both the latter; from the orange-peel a small quanty of aromatic bitter principle and some volatile oil, and from the coriander, volatile oil, both sparingly soluble in water, more so in proof spirit. To accomplish this we are instructed, first, to macerate the ingredients with the proof spirit for two hours, and then to add the water and continue the maceration for a like period, resulting in the preparation above described. If the proof spirit and water be divided respectively into three portions, and the three ingredients are treated with these separately, according to the Pharmacopœia directions, and the strained liquors are placed in separate bottles, the coriander solution is clear, the gentian and orange *slightly* turbid. In a few days, a flocculent deposit begins to form in the latter, so that on slight agitation it will be seen that the turbidity has much increased; the gentian changes very little, the coriander not at all. From our experience in the manufacture of Tinct. Aurantii, we know that proof spirit dissolves nothing from the peel which produces this deposit, and we conclude that the water subsequently added does this. Experience thus gained points us to another experiment, as follows: In one vessel place the coriander seeds and orange-peel, pouring on them the proof spirit; in another, place the gentian, pour on it the water; at the end of two hours, strain off separately and mix. Mist. Gentianæ Co. is thus produced in one-half the usual time, possessing the full aroma of the flavoring ingredients, the bitterness of the gentian, and a brightness similar to that of its infusion. Samples which have been kept two months have undergone no change other than the very slight deposit which always occurs in fresh infusions after standing a few hours, and from which the clear liquid is readily decanted.

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* Dict. of Chem., p. 552.

It might require some caution on the part of one decidedly opposed to *concentration* of infusions to recommend it here; but giving my readers credit for readily distinguishing between things which so widely differ, I do not hesitate to point out that in the case of Mist. Gent. Co., not only is it unobjectionable, but positively beneficial. In treating the gentian by the B. P. process, or by the modification indicated above, a quantity of mucilaginous matter is dissolved by the water, which, to say the least, is undesirable; by concentration in the following manner, this is readily got rid of. To produce one pint—

Take of bruised coriander seeds } of each, 240 grains.
Bitter orange-peel }
Pour on proof spirit, - - - - - - 16 ounces,
and set aside to macerate.
Gentian root very thinly sliced (or better
in coarse powder), - - - - - - 2 ounces.

Pour on this, distilled water, rather more than sufficient to cover it; allow to stand one hour, pour off the liquor, and repeat the process to the third or fourth time, when less than a pint of fluid will be obtained, and the exhaustion will be completed; evaporate to four fluid ounces, and mix with the tincture previously strained from the coriander and orange-peel. The mucilage is precipitated by the spirit, and by filtration a bright concentrated liquid is produced, which keeps as well as any tincture, and on dilution in the proportion of one part to three of distilled water, forms Mist. Gentianæ Co. that will compare favorably with, and contain nothing which is not contained in that freshly prepared by the Pharmacopœia process, and over which it possesses the decided advantage of keeping a longer time without change.—*London Pharm. Journal.*

AMERICAN PHARMACEUTICAL ASSOCIATION FORMULAS.

(*Continued from page* 59.)

CHLORODYNE, LIQUOR CHLOROFORM, COMPOUND.

(*P. Squire's Formula.*)

Take of	Purified chloroform	4	fld. ozs.
	Stronger ether	1	fld. oz.
	Stronger alcohol	4	fld. ozs.
	Molasses	4	fld. ozs.
	Pulverized extract licorice	2½	troy ozs.
	Hydrochlorate of morphia	8	grs.
	Oil of peppermint	16	minims.
	Syrup	17½	fld. ozs.
	Hydrocyanic acid, 2 per cent	2	fld. ozs.

Directions.—Dissolve the morphia and oil of peppermint in the alcohol; mix the chloroform and ether with this solution. Mix the licorice with the syrup and add the molasses. Shake these two mixtures well together, and lastly add the hydrocyanic acid, and again shake well.

Dose—Five to ten minims or ten to twenty drops. Shake the vial well before pouring out each dose.

MAGENDIE'S SOLUTION OF MORPHIA.

Take of	Sulphate of morphia	16 grs.
	Distilled water	1 fld. oz.
	Sulphurous acid	4 drops.

Make a solution.

TINCTURE OF GELSEMIUM.

Take of	Gelsemium, in fine powder	4 troy ozs.
	Diluted alcohol	12 fld. oz.

Macerate fourteen days and filter. This tincture may also be prepared by percolation, using a sufficient quantity of diluted alcohol to displace twelve fluid ounces of tincture.

TINCTURE OF POKE ROOT.

(*See Proceedings of Am. Pharm. Association*, 1857.)

Take of Poke Root, in moderately fine powder	6	troy ozs.
Cardomom, in fine powder	120	grs.
Diluted alcohol	2	pints.

Macerate fourteen days and filter through paper.

SWEET WINE OF IRON.

Take of Pulverized bitter orange-peel	½	troy oz.
Pulverized calisaya bark	1	troy oz.
Citric acid	½	troy oz.
Citrate of iron and ammonium	2	troy oz.
Distilled water	32	fld. ozs.
Sherry wine	64	fld. ozs.
Saturated tincture of fresh sweet orange-peel	16	fld. ozs.
Deodorized alcohol	16	fld. ozs.
Syrup of orange-peel	16	fld. ozs.

Mix, macerate and filter. DOSE—One tea-spoonful.—*Proceedings American Pharmaceutical Association*, 1874.

EXTRACTS.

ANTIDOTE TO STRYCHNIA.—A case of poisoning by strychnia, successfully treated with chloroform and cannabis Indica, is reported by Dr. Lawrence Johnson in the New York *Medical Record* (Jan. 30, 1875). A healthy young man, aged twenty-two, with suicidal intent, swallowed five or six grains of strychnia in a glass of soda water. The doctor found the patient, some twenty minutes after the dose had been taken, in violent tetanic convulsions. He at once administered chloroform by inhalation, which relieved the convulsions when under its effect, but they would return whenever the administration of the anesthetic was discontinued.

Two hours after the taking of the poison tincture of cannabis was administered, in doses of a teaspoonful at intervals of half an hour each, which had the effect of controlling the frequency of the convulsions to a great extent, while the violence was diminished by the inhalation of the chloroform. This treatment was continued for about five hours, when the patient was declared out of danger. The only other remedy employed in the case was the administration of sulphate of zinc to excite vomiting, whereby the still unabsorbed poison was ejected from the stomach.

VEGETABLE TALLOW, prepared from the seeds of the tallow tree (*Stillingia sebifera*, L.), is abundant in the island of Chusan, off the coast of China, where large quantities of this product are annually extracted.

The "tallow" is separated from the seeds by a process of steaming and gentle beating, being freed from impurities by pressure through a straw filter. Candles made of this substance are generally dipped in variously colored wax, and when intended for religious ceremonies are often beautifully ornamented.

ORIGINAL PACKAGES.

The following table shows the manner of importation and the weights of packages of the chief drugs in commerce:

Almonds	seron	varies from 1¼ cwt. to 2 cwt.
"	basket	" " 1¼ " 1½ "
" (Jordan)	box	25 lbs.
Annatto	case	nearly 2¼ cwt.
Arsenic	cask	about 4 cwt.
Burgundy Pitch	stand	1¼ cwt.
Camphor	box	about 1 cwt.
Cassia	chest	60 lbs.
Cinnamon	bale	92½ lbs.
Cloves	matt. about 80 lbs	chest, 200 lbs.
Cochineal	seron	140 lbs.
Cocoa	bag, about 1 cwt	cask, 1¼ cwt.
Copperas	hhd	varies from 16 cwt. to 20 cwt.
Galls	sack	3½ cwt.
Ginger (Jamaica)	barrel	about 1 cwt.
" (Barbadoes)	bag	1¼ cwt.
" (E. I.)	"	1 cwt.
Gum Arabic (E. I.)	chest	6 cwt.
" " (Turkey)	"	4 cwt.
Honey	gallon	12 lbs.
Indigo (E. I.)	chest	260 lbs.
" (Guatemala)	seron	250 lbs.
Lac Dye	chest	4 cwt.
Liquorice Juice	case	nearly 1½ cwt.
Mace	"	about 1½ cwt.
Madder	cask	varies from 15 cwt. to 23 cwt.
Magnesia	chest	1 cwt.
Mustard	keg	18 lbs. and 36 lbs.
Nutmegs	cask	200 lbs.
Olive Oil	chests of 60 flasks	jars, 25 gallons.
Opium (E. I.)	chest	149½ lbs.
" (Turkey)	"	136 lbs.
Pepper, Black	Company's bag	316 lbs.
" "	free trade bags	28 lbs., 56 lbs., 112 lbs.
" White	bag	about 1½ cwt.
Pimento	"	" 1 cwt.
Quicksilver	bottle	" 84 lbs.
Rice (E. I.)	bag	" 1½ cwt.
" (American)	cask	6 cwt.
Rosin	barrel	about 2 cwt.
Sago	chest, 1¾ cwt	bag, 1 cwt.
Saltpetre (E. I.)	bag	1½ cwt.
" (Refined)	barrel	112 lbs.
Shellac	chest	varies from 1 cwt. to 3 cwt.
Soap	"	3¼ cwt.
" (Soft)	barrel of 4 firkins	256 lbs.
Soda	cask	varies from 3 cwt. to 4 cwt.
Sumach	bag	" " 1½ cwt. to 2 cwt.
Tapioca	barrel	about 1¼ cwt.
Tobacco	hhd	varies from 12 cwt. to 18 cwt.
Tragacanth	case	about 2½ cwt.
Turpentine	barrel	varies from 2 cwt. to 2½ cwt.
Vermilion	bag	50 lbs.

—*From the Chemists' and Druggists' Diary.*

GLEANINGS.

WOURALI, OURARI, OR CURARE POISON (*Strychnos toxifera*, Schomb).—Extensively employed in the northern parts of South America for poisoning the arrows used both in war and in the chase. It is obtained by scraping the young branches with a knife. The bark thus obtained is bruised, and reduced to a fibrous mass. It is then steeped in water for some time, after which it is thrown into a funnel. Water is poured upon the mass of ground bark, and a yellow fluid exudes, which, being concentrated by evaporation, and mixed with glutinous ingredients to give it consistency, forms the black substance known as this celebrated poison. The effects when it enters the blood are terribly powerful, although when swallowed it does no injury.

THE morality of the opium traffic with China is a question of growing interest in England. An Anti-Opium Association, designed to put an end to it, already exists. A public meeting, presided over by Mr. McArthur, M. P., was recently held in London, at which there was much plain speaking. The chief address gave a minute account of the production and sale of Indian opium, from which the following facts are gathered: All the opium imported into China, with a small exception, comes from India. It was introduced into China against the will of the Chinese by the treaty of Tientsin in 1858. In the East India Parliamentary report for 1871 is a Chinese dispatch appealing to the justice of the English to release them from their treaty obligation in this respect. It complains that opium is destroying the country, and that the laws against the native-grown opium can not be enforced on account of the admission of the Indian article. There are two opium-producing regions in India. One is in the native States. On this opium, which is shipped from Bombay, the Government simply levies a tax, which in some years amounts to over £2,000,000. The British opium is grown in Bengal, and is a government monopoly. About one-twentieth of the crop is sold in India. The great bulk of it is packed for the China market, and sold by a government official, at auction, in Calcutta. The profits of the sale average 300 per cent. on the cost of production. In the year ending March, 1872, 49,695 chests of Bengal opium were sold at Calcutta for export, and 39,225 chests were shipped from Bombay. The net opium revenue for that year was £7,656,000. The speaker compared the raising of Government opium to a supposed parallel case of the United States distilling whisky to sell to the North American Indians. In the discussion which followed the address, a Chinaman testified to the deterioration of the Chinese since the introduction of opium. At the close of the meeting, a resolution was passed denouncing the course of the Government, and pledging all present to the support of the Anti-Opium Association. A confirmation of the foregoing account is derived from the correspondence of missionary physician at Hangchow, China, which has appeared in *The Medical Missionary Journal*, published in Edinburgh. So great is the eagerness of opium-smokers to be cured, that the hospital cannot contain the numbers who apply for admission. Over 150 of them have been discharged as cured, but the majority of them soon relapse.

THE MEDICAL PROPERTIES OF THE CINCHONA ALKALOIDS.—The following observations have a peculiar practical importance just now, because, for the first time, all of them can be obtained in a form convenient for administration. Dr. Joseph Dougall, of India, (*Edinburgh Medical Journal,*) presents the results of a large number of careful observations. The three most important alkaloids—cinchonia, quinidia and cinchonidia—are obtained so largely in the manufacture of quinia from some cinchona barks, that the question of their utility is full of interest. From a series of comparative trials of these alkaloids in malarial fever, Dr. Dougall obtained conclusive evidence of their value. In the one hundred and eight cases reported, quinidia was given in thirty-nine cases, cinchonidia in thirty-five and cinchonia in thirty-four. There was little difference between the alkaloids in the necessary duration of treatment, but a difference was observed in the doses required. Quinidia was the most powerful, cinchonidia the next, and cinchonia the least. It was noticed that they were the most serviceable when administered during the paroxysm only. Among the symptoms induced by the remedy, and an important concomitant of the cure, was bilious purging, which occurred in nearly one-half of the cases treated.

LANGBEIN'S PROCESS FOR POTASSIUM IODIDE.—The author employs cuprous iodide, containing sixty to seventy per cent. of iodide, which is now imported in considerable quantities from Peru. The iodide is reduced to fine powder and suspended in water acidulated with a few drops of hydrochloric acid. It is then decomposed by a stream of sulphuretted hydrogen, and the excess of gas is destroyed by a solution of iodine in iodide of potassium, after the liquid has been decanted from the insoluble copper sulphide. Potash is then added, and the whole evaporated till crystallization takes place. During the evaporation, the suspended sulphur gathers together in balls and sinks to the bottom. The iron sulphate formed in the preparation of the sulphuretted hydrogen covers the expense of the acid and iron sulphide used, while the copper sulphate obtained by roasting the copper sulphide covers the other expenses. One point to be looked at is to decant the liquid at once from the copper sulphide, as otherwise copper sulphate is formed by oxidation and the final product rendered impure.—*New York Drug Bulletin.*

PERSIAN OPIUM.—A feature of the past year, in connection with the opium market, has been the improved position taken by Persian opium in the estimation of buyers here. It seems likely to become an important competitor with "Turkey seconds." The supply received during 1874, especially the North Persian growths, is said to be far in advance of what has come to hand previously. From some parcels, a yield of morphia equal to fine Turkey has been obtained. A point in favor of the Persian is the fact that all the pieces in a parcel are invariably alike in quality. In "Turkey seconds" no two pieces are equal, and, therefore, it is next to impossible to get a correct assay of the drug from sample. Egyptian opium seems to have almost retired from the competition altogether, and it seems likely that the substitution of Persian for it will prove a considerable advantage to English buyers.—*New York Drug Bulletin.*

EDITORIAL.

Nostrums Illustrated.—We copy the following article as the best illustration we have so far met with, from the medical profession, of the benefits they derive from prescribing nostrums.

The preparation alluded to is no better nor worse than a score or two of other secret compounds which, in the guise of patent medicines, but under some high-sounding title, are being foisted upon the medical profession through the agency of medical journals duly indorsed by eminent "quacks" who call themselves *doctors*. We trust many more of the duped may "come to confession" with the candor of our honest though bluff friend, the writer of the article, who evidently has given his last medical indorsement to this species of quackery. We commend his observations on the part which medical journals play in this humbuggery to those who have hitherto deemed the PHARMACIST too severe in its censure of those pandering to such empiricism.

We have no quarrel with the proprietors of these nostrums, nor do we seek any: all we object to is the manner in which they imposed their nostrums upon the medical profession and by this means upon suffering humanity. We therefore will continue to raise our voice in protest against medical journals and physicians who thus undermine legitimate pharmacy and degrade the practice of medicine.

The foot note attached to the article by the editor of the *Nashville Journal of Medicine and Surgery*, is what may be styled rather evasive and weak. It would have become this learned man to have smote his breast and exclaimed "*peccavi.*" We have now no hope left that this professional "hoary old sinner" will ever repent. We therefore drop a silent tear, and mutter "O Lord, have mercy on his soul." "*That's the way to do it.*"

ELIXIR IODO-BROMIDE CALCIUM COMPOUND.

BY S. P. CRAWFORD, A. M., M. D., STOCKTON, CALIFORNIA.

I fear my lucubrations will become burdensome to the pages of your *Journal*, and wearisome to your readers—so much so that you may be driven to the necessity of striking me from the list of your contributors. All I have to say is, "Strike, but hear me," for it has come to the blabbing or bursting point with me.

The above article is but one of a class of medicines I see advertised in the medical journals from Dan to Beersheba. Now, a medical journal has been, with me, what a religious newspaper is to our pure and simple-minded church matrons; they look upon their church paper as the next best thing to their Bible, and that its editor is a Paul in learning, faith and purity, and a Peter in piety, and that all the paper contains is sanctioned by this paragon of faith and learning. The paper is looked upon as the expounder of the true faith, and, of course, could contain nothing in its columns smacking of impiety or falsehood, not even the most vulgar advertisement. Hence it is that the columns of such papers are crowded with advertisements of the vilest quack nostrums, and it is through this class of journals that three-fourths of this class of compounds of stuff and stink find their way to the hearth-stones and stomachs of the people.

I look upon the medical journals as being the expounders of the true medical faith, and should contain nothing, inside or outside, that would be calculated to lead the minds of the laity in the profession astray. The great body of the profession have not extensive libraries, nor are they blessed with the means to possess themselves of every new book as it comes steaming from the press, laden with the treasures of the latest discoveries; neither have they time for extensive reading. Their journal is their medical Bible and their main reliance to keep posted on therapeutics and general medical science.

With this exordium, I desire to relate my experience with the above article, with some comments added thereto.

I saw the article whose name appears at the head of this paper advertised in the pages of all the journals that come under my observation, filling from two to four pages, setting forth its virtues, with such flattering notices from physicians, relating marvelous cures in many cases, etc., that I felt anxious to try it, believing, from the flattering encomiums passed upon it by those who had tried it, that it was certainly the *desideratum* in certain diseases. I made inquiry for it in the shops, but failed to get it. I wrote to the proprietors, asking price and where it could be had, and was informed that it was for sale in all the principal drug establishments in the United States. Not long after this, I had a case that had run the rounds of the advertising quacks and through the gauntlet of nostrum-vendors, from a pinch of dry "monkey-dung" to the "last chance." The case was such an one as I thought might be met by the above article. Before taking the case, I made my patient promise to abandon all nostrums, not to listen to the croaking of old women, nor to be allured by the advertising quacks or "traveling doctors," but, if any should come about, to knock them on the head with a pine knot, or set the dogs on them; I made my patient promise implicitly to follow my directions, or I would not take the case.

Having thus fortified myself against all intruders, I gave a little medicine preparatory to the *coup de main* with the *Elixir Iodo-Bromide Calcium Compound.*

Three or four days after this, I called and prescribed the aforementioned article, and ordered it to be in readiness at my next visit.

It came, and *I* came, at the appointed time. My first inquiry, after the salutations of the morning, was, "Have you got the medicine ordered?" I never shall forget the look of reproach and disappointment of my patient, as she answered in the affirmative, pointing to a bottle standing on the shelf. It stood by the side of an empty bottle of Jayne's Expectorant. It was pasted all over, from stem to stern, with yellow paper, giving its ingredients, setting forth its virtues in a host of diseases, directions as to dose, etc., flattering notices from medical journals, and encomiums from numerous physicians, extolling its wonderful virtues.

Along with this pasted cover was a whole lot of loose wrappers, containing pretty much the same things, in a little more extended form. I never saw the vilest compound in the domain of charlatanism more thoroughly fortified with recommendations and flattering notices, such as are designed for the gaping public.

My first thought was, Is there not some mistake? I took it down, turned it over and over, looked at it, tasted it, smelt it. No, there is no mistake. Here is the name, occupying the whole length of the bottle, and here are the ingredients. About one-fourth of the contents of the bottle was gone, and I was informed that it was the last bottle in the drug store, and that some had been sold out of it. Some doctor, no doubt, more fortunate than myself, desiring to test its virtues, had called for it in person, and, not liking too much of a good thing in the way of flattery and recommendation, had taken a few ounces of it, ashamed to be seen with the original bottle.

"Doctor," said my patient, "I thought you were opposed to patent medicines and all advertised nostrums! You made me promise to have nothing to do with them, and here you are giving the very things you denounced in unmeasured terms!"

I sunk right down in my boots—I wilted—and felt small enough to crawl through a key-hole, and mad enough to bite "pi." "Madam," I said, "this is no patent medicine or advertised nostrum."

If *it* is not, then *Jayne's* is not; for I can see no difference between it and Jayne's, except that Jayne's is the most neatly labeled. They are both covered with directions as to dose, diseases which they are said to cure, certificates and recommendations."

I used to consider myself pretty good at splitting metaphysical hairs, but here was a medico-therapeutic hair that defied all my skill. I thought I had the advantage in the fact that my hero was eviscerated, and the contents of his abdomen were spread out on the label; but these contents were all Greek to my patient.

As a *finale* my patient said: "Doctor, if I am to take this medicine I can dispense with your services; for all the directions are given here, and I see no further necessity for your attendance."

I left, and up to date I have heard nothing more from my patient.

Now, Messrs. Editors, you see the reason why I want to be heard, and why it is that my wrath has arisen to the point that I must "blab or burst." If ever a man was justifiable in hiring some one to "cuss," I ought to be allowed to hire a score eloquent in the dialect, and then the subject would not be half ventilated. "Why?—because you have lost a patient, and thereby a fee?" Not so; "he that steals my purse steals trash," but he that steals my good name, let him be *anathema maranatha.* This dabbling with the formidable article at the head of this paper, it is true, did rob me of a patient and a fee; but it did more—it robbed me of my good name. Instead of proving myself an honest physician, it placed me, in the estimation of some, at least, as the most consummate ass in charlatanism. To set my face, like flint, against every appearance of evil in medicine, honestly trying to relieve the sick, has been the business of nearly thirty years of my life. While thus engaged, to find myself plunged head and ears into the cesspool of charlatanism, and doused about until the breath of honesty becomes extinct, is a hard road to travel. It is time for all such to "cuss out and quit."

With the merits or virtues of the article in question I know nothing; therefore have nothing to say about it, *pro* or *con.*

This is what I want to say: If there are any virtues in that medicine, and the proprietors think they have discovered a happy combination of ingredients of value to the profession, and design it for their use, let them prepare it as other medicines are prepared, with simple name upon the label, and the name of the house that prepares it. The answer to this is, that it is prepared in bulk bottles of five pounds each, for physicians. This is killing two birds with one stone. The proprietor not only prepares it for physicians, but prescribes it in diseases, not in the way physicians usually prescribe medicines, but as the quacks do, by sending it broadcast over the land, fortified by the most flattering encomiums and specific directions for public use, by any one who may be captivated by its recommendations, as all quack nostrums are.

If this is not quackery, in the name of Heaven and all honesty what is it?

The defense, perhaps, for this mode of procedure, is, that all these notices, encomiums, specific directions and laudations are designed only for the eyes of the profession. While this may be true, it is plain to be seen that, behind all this, there lies the desire to thrust it on the public for general and indiscriminate use, as all proprietary medicines are, with the double advantage of being backed up by the profession. If this is legitimate medicine, deliver me from all such! When the business of the doctor is reduced to the prescribing this one's compound and that one's elixir, and then, as soon as prescribed, to have the proprietor step in, flourishing his gilded and magic bottle in your face, take charge of your case, kick you *a posteriori,* and send you home, "I want none in mine." Give me the good old days when doctors kept their own shops and compounded their own medicines.

Having finished my talk, I shall now take a bath, "potenized with the Extract of Moonshine," cuss out and quit.

NOTE.—Our most excellent friend might have saved himself a world of chagrin and mortification by leaving that monstrous bottle, with its outlandish label, on the shelf of the grocery store, untouched, unhandled and untasted. "That's the way to do it."—*Editor Nashville Journal of Medicine and Surgery.*

CORRESPONDENCE.

EDITOR OF THE PHARMACIST:

Will you please publish in your next issue a formula for the preparation of CHLORIDE OF GOLD AND SODIUM; also, a practical process by which solutions of nitrate of silver which are contaminated with other chemicals can be easily freed from such impurities; also, by what method can *silver wastes,* such as paper filters, clippings, etc., be best reduced to metallic silver.

PHOTO.

CHLORIDE OF GOLD AND SODIUM.

Take of Gold (pure)	2	parts.
Chloride of Sodium	3	"
Nitro-Muriatic Acid	10	"
Water, sufficient quantity.		

Dissolve the gold in the acid by the aid of gentle heat; make a solution of the chloride of sodium in water, and filter through paper; then add to the solution of gold and evaporate the mixture to dryness. This compound salt should be kept in well corked bottles.

Solutions of nitrate of silver, when contaminated with other chemicals, are best separated from these by reducing the silver salt to the metallic state. The following we have found to answer a good purpose: Filter the solution through paper (saving the paper filter and its contents); to the clear solution, add metallic zinc which has previously been reduced to the powdered state; shake well together until the silver has all been thrown out of solution; decant off the solution, if free from silver, which can easily be determined by testing the solution with chlorhydric acid; wash the precipitate, which consists of metallic silver and zinc, with a little water, and add to it sufficient chlorhydric acid (perfectly free from nitric acid) to dissolve the metallic zinc—this is best effected by subjecting the mixture to the heat of a water-bath from eight to ten hours—add a little water and pour on paper filter; after the solution of the chloride of zinc has passed through, wash well with distilled water until the residue left in the filter is pure metallic silver in a fine divided state; this, when now dissolved in pure nitric acid, will yield pure nitrate of silver.

For the reduction of silver paper, filters, etc., to metallic silver, the following processes have been employed by us with apparent good results: Burn the paper to ashes; collect and place in a porcelain evaporating dish and pour upon them crude muriatic acid sufficient to cover them; apply heat by means of sand-bath until all the moisture has been dissipated and the residue is perfectly dry; now add to the ashes an equal weight of carbonate sodium, to which previously ten to fifteen per cent. of nitrate of potassium has been admixed, and subject the whole mixture in a crucible to a red heat, whereby a regulus of metallic silver will be obtained.

Another process is to burn the paper to ashes and mix with them an equal weight of carbonate of potassium; place the mixture into a crucible and subject to heat until it has formed a fluid mass; let cool, and break the crucible to obtain the metallic button, and which is dissolved in nitric acid, following the formula of the Pharmacopœia for nitrate of silver.

Mulder has suggested the following process for the preparation of pure nitrate of silver from silver coin: Dissolve the coin in pure nitric acid and obtain a clear solution by settling, decantation and filtration; to this clear solution is added chlorhydric acid in slight excess; the precipitate of chloride of silver thus produced is heated several times with a dilute solution of chlorhydric acid, thereby removing the copper and other base metals. The pure chloride of silver, after drying, is mixed with an equal weight of crystallized carbonate of sodium, to which previously one-eighth of its weight of pure nitrate of potassium has been added, the mixture is desiccated by gentle heat to drive off the water of crystallization and adherent moisture, and then placed in a covered crucible and heated to the fusing point of silver. When cold, the metallic silver is removed, washed in hot water to free it from adhering flux, and the silver is dissolved in pure nitric acid as directed for making nitrate of silver.

WAWRINSKY has proposed the following method in freeing silver solutions from copper: After having made a solution of the metallic silver in nitric acid, drive off with the aid of heat the excess of acid, and make a solution of the residue in water; to the solution add sufficient quantity of carbonate of magnesium in fine powder, until the copper has all been thrown out of solution; then filter through paper, wash the filter with water, and evaporate the clear solution to the point of crystallization.

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THE PHARMACIST.

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TINCTURE OF PHOSPHORUS.

BY ROBERT H. COWDREY.

[Abstract from a Thesis presented to the Chicago College of Pharmacy.]

The subject of this paper was chosen with the view of determining to what extent phosphorus is dissolved in alcohol. A search through various authorities as to the solubility of phosphorus in this fluid revealed but one statement, namely, that of BUCHNER in STORER'S DICTIONARY OF CHEMICAL SOLUBILITIES, who states that 320 parts of alcohol sp. gr. 0.977 will take up one part of phosphorus. My own experiments showed at once that the solubility of phosphorus varies greatly with the temperature of the alcohol. If it is saturated at the melting point of phosphorus, and filtered, it will, on cooling, deposit a considerable quantity of the phosphorus. The various tinctures of phosphorus mentioned in this paper were allowed to cool down to 60° F., or thereabout, before being filtered, in order to avoid, as much as possible, the errors growing out of the variation in solubility before mentioned; also, the results stated are the mean products of several assays on each specimen, these varying but slightly in any instance.

My first intention was to determine the amount of phosphorus by direct experiment, by taking of phosphorus, say 12 grains, alcohol a certain quantity, and dissolving until the alcohol was saturated, which would take, say 5 grains, which could be determined by freeing the alcohol of all undissolved phosphorus and weighing the undissolved portion, which we find to be 7 grains. But this method had so many sources of error, and so many practical difficulties presented themselves, that it was abandoned in favor of one which would determine the actual amount of phosphorus in a given quantity of solution.

The first problem that presented itself was in regard to the conversion of the phosphorus into phosphoric acid. Nitric acid somewhat diluted was first tried, but with unsatisfactory results. Then, at the suggestion of my preceptor, bromine water was used, (made by saturating water with bromine,) with complete success. The reaction here involved takes place, doubtless, in two stages, as the following formula would indicate:

$$(Br_2)_{10}+P_4=4PBr_5, \text{ and } 4PBr_5+(H_2O)_{16}=20HBr+4H_3PO_4.$$

To insure complete oxidation of the phosphorus to phosphoric acid, an excess of bromine water was used, and this excess expelled by boiling the solution. After cooling, the fluid was neutralized with ammonia, and the phosphoric acid determined volumetrically, with uranium nitrate, according to the method laid down in Fresenius' Quantitative Analysis. Having thus obtained the amount of phosphoric acid in a given specimen, the corresponding quantity of phosphorus was found by a simple calculation.

Specimen No. 1 was prepared by heating phosphorus to fusion in alcohol sp. gr. 0.822 and shaking until cooled to about 60° F., and filtering off the clear liquid. This specimen yielded 0.25 per cent. of phosphorus.

Specimen No. 2 was made by the same general formula as the first specimen, only substituting alcohol sp. gr. 0.835. This yielded 0.17 per cent. of phosphorus.

Specimen No. 3 was obtained from a stock bottle which had long been in use. This tincture was prepared by placing a stick or two of phosphorus in a bottle nearly filled with commercial alcohol of sp. gr. (about) 0.820. It was allowed to stand in this state for an indefinite time, the tincture, as required, being decanted from the phosphorus. This was tested as the above specimens were, and the result, when calculated into phosphorus, indicated 0.62 per cent.

This excess over the other specimens was so great as to raise a question as to the cause. The tincture was tested with litmus paper, which showed a decided acid reaction. The conclusion seemed inevitable that the tincture contained phosphoric acid as well as phosphorus, the acid resulting from gradual oxidation of the dissolved phosphorus by contact with the air forming phosphoric acid; the alcohol losing a part of its phosphorus, is again in condition to dissolve a fresh amount from the excess of phosphorus, equal in quantity to that which was oxidized, the change constantly going on so long as phosphorus remains in excess.

To be fully assured of this, I took 60 grains of the tincture and neutralized it with spirit of ammonia, and added an alcoholic solution of chloride calcium to it, which in a short time produced a dense precipitate of phosphate of calcium. After the solution of chloride of calcium had ceased to produce a precipitate, the solution was filtered; the precipitate on the filter was washed first with alcohol, then with water. I then poured upon the precipitate remaining in the filter a dilute solution of acetic acid until all the precipitate was dissolved, and finally washed with water until the filter contained, if any, only a trace of the precipitate. The liquid I then tested with uranium nitrate, and found it indicated the presence of 0.34 per cent. of phosphorus, which amount, deducted from the first result, left a residue of 0.28 per cent. of phosphorus, almost exactly the same as that obtained from specimen No. 1.

Then to find how soon oxidation commenced, and to see if the tinctures I had prepared had also undergone a change, I treated them in the same manner with chloride of calcium, a precipitate being formed in the same manner as in specimen No. 3, but not nearly so dense. I then prepared a fresh tincture by the same formula as specimen No. 1; filtered it and added spirit of ammonia and a solution of chloride of calcium, filling the bottle and corking tighly, setting it aside in diffused daylight. Another specimen was treated in the same manner, and placed in the dark. The specimens were allowed to stand for several days, then finding no precipitate in either, a small portion was taken of each specimen, put in separate bottles of considerable capacity, corked and again placed, one in the dark, the other in diffused daylight, as before. After standing a week or ten days, a change was noticed, a slight cloud of the phosphate of calcium being formed in both specimens, but less readily in the specimen placed in the dark, which, I think, would tend to prove that the phosphorus was oxidized by contact with the air, notwithstanding the presence of the alcohol vapor; also, that the best method of keeping tincture of phosphorus is to put it in vials of convenient size, excluding air as much as possible, corking tightly and placing in the dark; and it should have some phosphorus in excess, so that as fast as the phosphorus which is in solution is converted into phosphoric acid, it may re-dissolve more, and in this way be a preparation having a standard strength which can be relied on; the phosphoric acid which is thus formed being but very slightly, if at all, objectionable.

The tincture of phosphorus is incompatible with syrup or any other aqueous solution, and it should not, therefore, be administered in such vehicles. I have experimented with and found that glycerin dissolves as much phosphorus as alcohol of sp. gr. 0.820, and I would, therefore, suggest it as a solvent, or at least as one of the best vehicles for its administration.

From the foregoing experiments and observations the following conclusions have been drawn.

1. Alcohol of sp. gr. 0.822 dissolves, at common temperatures, 0.25 per cent. of phosphorus, equal to 0.93 grains in each fluid ounce. Alcohol sp. gr. 0.835 dissolves, at common temperature, 0.18 per cent. of phosphorus, equal to 0.64 grains in each fluid ounce. Glycerin sp. gr. 1.26 dissolves 0.17 per cent. of phosphorus, equal to 0.12 grains in each fluid drachm, or 0.96 grains in each fluid ounce.

2. Phosphorus in alcoholic solution undergoes oxidation when in contact with air; light has a tendency to facilitate oxidation, therefore it should be protected as much as possible from the light, dark colored bottles being preferred for its keeping.

3. When an excess of phosphorus is kept in the tincture, the fluid will always contain practically the same amount of free phosphorus; phosphoric acid, on the contrary, will vary in amount with the exposure of the tincture.

4. The liquid is precipitated by aqueous liquids, but mixes in all proportions with glycerin.

5. The tincture is best prepared as follows: Take of phosphorus, scraped clean, one stick; commercial alcohol, thirty-two fluid ounces. Allow to remain in contact a week at least, at medium temperature, and decant as needed, and keep in dark or in the dark colored bottles.

BOLUS VERSUS PELLETS.

BY BOLUS THE GREAT.

If I may be permitted to prescribe for your correspondent who conceals himself under the *nom de plume* of "Reformer," I would suggest a bolus of blue mass, which, though it may not act upon the liver—which is denied now-a-days—nevertheless has a magical effect upon a jaundiced brain, as multitudes will testify; or, if he fears a bolus, suppose he take ten grains of *mercurius dulcis*, first attenuation, which will be equally efficacious if he only keeps in mind its homogeneity. After the medicine has had its effect, if he reviews his communication to the PHARMACIST he will observe that his first proposition is very defective, viz., that medical schools are becoming so numerous as to justify him in becoming a critic. Each State of the American Union is in itself a sovereignty as distinct as any one of the principalities which go to make up the great German Empire, and excels them in point of area and population. German schools are established by the Government according to the actual needs of the empire; why then should not each one of our larger and more populous States have its professional schools—theological, legal and medical? These schools multiply just in proportion to the growth and increase in number of the great cities or centers of education, and differ in superiority just in proportion to the wealth and character of these communities. It is so in Germany, the home of learning, so that we see there schools differing in importance from the minor one at Kiel and Greifswald to the greater of Vienna and Berlin. There is no reason why a Chicagoan, for instance,should be compelled to travel a thousand miles or more to attend a medical course, when competent teachers—teachers becoming more and more competent with years and experience—may be found at home, even though distant institutions may have attained to a higher degree of excellence. This in itself is a justification of the formation of one or two medical colleges in each one of our States; and there are no more than two *general* medical colleges in any State, though there may be one or two *special* schools devoted to the promulgation of some exclusive medical dogma or other.

Proposition second is to the effect that graduates from medical colleges should compare favorably with those of the other learned professions in general education, and in having a specific knowledge of the technical branches of study taught therein. I think if our Luther will take the trouble to consult the catalogues of medical colleges, he will find as many graduates of colleges among the students as in the catalogues of other professional schools, and by comparing former catalogues with recent, he will learn that the number of these is steadily increasing every year. And many of them who have never been dubbed A. M. and B. S. have at least received a high-school or academic training. This hardly helps them in practice, for it is noteworthy that the "biggest fools get the largest practice," which is a commentary not upon the medical profession,but upon the public at large. The pulpit montebanks, the legal shysters and the medical quack ride rapidly into public favor and patronage, till a long pull, a strong pull, and a pull altogether brings the respectable practitioner to the foremost rank just as his hairs turn gray and he is about to lie down to rest.

The expression "pellet versus bolus" exhibits from what a narrow standpoint Reformer undertakes to criticise the medical profession, viz.: from the standpoint of the *materia medica*. Does medical education consist simply or mainly in learning the physical and medicinal properties of a horde of chemicals and herbs? If so, the pharmacist is the physician, not he. In every medical college in the United States three full years of study are required, and this study includes many branches, including the more practical ones: anatomy, chemistry, theory and practice, surgery, obstetrics and therapeutics. Connected with every large institution there are hospitals for every kind of disease, where the student has an opportunity to observe by the bedside a greater variety of cases than is afforded under the most favorable circumstances by the busiest practitioner. He is generally an enthusiast—works and enjoys his work—and has ample stimulus in the society of his fellows to try to excel. This is none the less true of those who leave the "farm, the forge and the mechanic's bench," and, like all who pursue knowledge under difficulties, wrestle with poverty and generally triumph. The drones as a rule fall out, and some are disheartened before they reach their journey's end and so seek other fields. In one of our best medical colleges at least ten per cent. fall out in this way, either before or after graduating.

The medical course is the longest, most severe and most expensive required in professional schools. While the student of theology may receive the benefit of the "educational fund," and the student of law may pay his way by copying, etc., in a law office, the student of medicine has no such opportunity. He must make his own way in the large, expensive city. He goes in rags and smells of the dissecting-room, and is excluded from boarding houses; but how can he help it?—he is engaged in a terrible struggle. He has much to do. He has hitherto struggled to get a good English education, otherwise he could not read, much less comprehend the first paragraph in a medical work. He must devote more hours to anatomy than the student of theology devotes to Hebrew, more hours to chemistry than he does to Greek, more to surgery than he does to homiletics, more to pathology than he does to theology, more to transcendental science than he does to speculative philosophy. He spends one year longer than either theologue or law student is required to do.

At last he begins his life work under every pecuniary and social disadvantage, opposed even by those who should be his best friends, until the number of his prescriptions begin to add to their coffers, and then he is suddenly transmogrified into a "very successful physician, who never loses a case," and these little slips of paper, which are the basis of the druggists' criticism and the measure of his good will, are, though sacred in their place, to him but the most insignificant part of his life work. Some don't use them at all—no one need use them—and, except for convenience to the physician, the retail dispenser is of no more use than the fifth wheel of a coach. From this standpoint, however, Reformer attempts to criticise. One might as well presume to criticise the sculptor because he furnishes the clay, or the painter because he makes the picture frames, or the architect because he carries the hod. Viewed from this standpoint, medicine, in comparison with its true scope and aim, falls to the level of a dark legerdemain whose only trick is to convert nostrums into nuggets.

In conclusion, I would like to ask Reformer what disposition he makes of prescriptions when they are brought to his establishment? I mean those proceeding from those physicians "whom the community shun, preferring to die a natural death." According to him, a prescription translated into plain English would read something like this: "Mr. A, I have a patient who is slightly ill. Please prepare me this vile compound, of which I append formula, that I may at least make him sicker, and, if possible, cause his death." The conscientious druggist, delighted at the opportunity to add to his day's profits, forthwith prepares the prescription, at the doctor's request, and washes his hands of all responsibility. *If he believes what he says,* why does he not return the prescription, with the remark something like that which Dr. Holland made to the Sultan: "My mission is to save life, not to destroy it." If what Reformer says be *true,* he must blush before heaven and earth and be liable to the Judgment if he condescends to prepare a bolus. But it is not true, and hence becomes supremely ridiculous.

I hope your correspondent will enjoy his Quixotic efforts at reformation, but look first and see if he has not been long anticipated, and not enroll himself among those who pride themselves upon their science, and go "trotting about, talking very much and knowing very little; dipping their pipes into the soapsuds of science and blowing a bubble in which they see a face and say, 'That is God,' but it is only the face of the blower, distorted."

NOTE ON SALICYLIC ACID.

BY EDWARD R. SQUIBB, M. D., OF BROOKLYN, N. Y.

This substance, long known as a rare and curious chemical derived from the vegetable kingdom, has lately been brought into prominent notice, chiefly in Germany, from its relation to those changes which are commonly known and best understood as fermentations, to which class or kind of changes so many diseases and pathological conditions are now pretty well known to belong.

The writer knows far too little of the subject and its relations to attempt an accurate or exhaustive paper upon it, and the object of this note is simply to call attention to it, that it may be read up in the current literature—to give a brief outline of its bibliography, that reference may be made in regard to its history—and to offer some thoughts in regard to its sphere in medicine.

Salicin is a glucoside or neutral vegetable principle discovered by Leroux[1] in 1830, in the bark of some species of willow, Salix, whence its name. It was afterward found in various species of poplar[2], and in other trees and plants. Salicin was chiefly investigated by Piria[3] who gave an

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1, Journ. de Chim. Med. T. 6, F. 341. 2, Braconnot, Ann. Chim. Phys. T. 44, F. 296. 3, Compt. Rend. T. 6, F. 388; Ann. Pharm. T. 30, F. 165.

elaborate account of its derivatives, and among these, of salicylic acid. Early in its history the acid was prepared by Löwig and Weidmann[1] from the flowers of Spiræa ulmaria; and later, a research by Prof. Procter[2] of Philadelphia, showed that our oil of wintergreen, Gaultheria procumbens, was really a salicylous ether; and from this source salicylic acid was obtained by Cahours[3]. Gerhardt[4], Ettling[5] and others contributed to the researches by which the properties and reactions of salicylic acid were accurately determined and its composition fixed; but as yet it was but a chemical curiosity whose potential possibilities were quite unknown. It still belonged to that class of substances which had simply consumed a large amount of patient labor, and in relation to which the rigid utilitarian asked Michael Farrady "What is the use of such things?" and received for reply the answer, "What is the use of a baby?"

The physiological and pathological effects of salicin, though imperfectly investigated, seem to have gradually and slowly directed attention to those of its derivatives, and occasional paragraphs have appeared in current scientific literature, from time to time, upon salicylic acid for some years past. But only within a year or two—and the writer regrets that he does not know by whom first—German writers have alluded to its peculiar and powerful effects as an antiferment and antiseptic. As its peculiar powers were recognized, and its importance became possible and probable, the sources from which it had been obtained as a chemical curiosity became impracticable, in consequence of the small quantity which could be obtained from them, and the great cost in material and labor.

The next step in the progress of salicylic acid toward practical utility affords an excellent illustration of the progress in chemical knowledge made of late years.

The modern chemist appears to know, within certain limits, the combinations of the elements in organic substances very much as he knows the axes of crystals, and hence deduces their planes of cleavage. That is, he knows how they will split up under given conditions, and what new arrangements of their elements are possible or even practicable. And farther, he knows, by pure reasoning upon facts, what new elements to introduce between the molecules of one combination to split it up by a new set of affinities into new combinations never before seen or reached, and which would have remained long unknown under the mere empirical researches of the older chemistry. The peculiar properties and reactions of salicylic acid as an antiferment producing a demand for it, the German chemists, Kolbe[6] and Lautemann, sought for an organic compound which from its elementary composition might be split or dissociated into the desired new compound, salicylic acid. This substance, whose molecule might be broken up, they found in Phenol, or the so-called Carbolic Acid, and it is a very curious circumstance—purely accidental, so far as this writer knows—that a substance of well and long established character as an antiferment should have offered to these chemists a molecular con-

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1, Jour. pr. Chem; Bd. 19, S. 236. 2, Amer. Jour. Pharm., v. 14, p. 211. 3, Compt. Rend. T. 16, F. 863. 4, N. Ann. Chim. Phys., T. 7, F. 217. 5, Ann. Pharm. T. 53, F. 77.

6. Archiv. der Pharmacie (3) v. 5, p. 445, from Jour. fur Practische Chemie. Bd. 10, S. 89, and quoted in Ding. Polyt. Journ. Bd. 214, S. 132, and in Parm. Jour. and Trans. of London, Third Series, No. 231.

stitution so well adapted to be broken up into a still more powerful antiferment; for there is no relation whatever, either in composition, or chemical, or physical properties between carbolic acid and salicylic acid, except in their effects as antiferments, and the two may, so far as present knowledge extends, accomplish these effects by similar or by altogether different reactions. The agent which the German chemists selected to resolve the molecule of Phenol into other molecules, one of which should be salicylic acid, was dry carbonic acid or carbonic anhydride, as it is called in the new chemistry. Thus, from the action of carbonic acid on carbolic acid, salicylic acid is produced; a process which is about as far from the original willow tree as a source of the acid as can well be imagined, and yet a process which is as much the result of human knowledge based upon human research as that by which LeVerrier and Adams discovered the planet Neptune. It appears that where Phenol or Cresol, and perhaps others of this class of phenols, are combined with an alkali metal, such as sodium or potassium, thus forming phenol-sodium (often called phenate of soda) for example, and well dried carbonic anhydride is passed through the dry powder of phenol-sodium heated to 100° to 250° C.=212° to 482° F., the reaction occurs which produces salicylate of sodium and other compounds. The salicylate of sodium thus formed is dissolved in water and decomposed by hydrochloric acid, which, uniting with the sodium by superior affinity, sets free the salicylic acid in the form of crystals. These crystals are washed and re-crystallized from a hot solution, and when dried, form a crystalline powder of a light brown color, somewhat resembling in color the powder of pale cinchona bark. This is unbleached salicylic acid and is probably pure enough for almost all, if not for all, the purposes to which the acid is at present applied to practical uses. The small proportion of coloring matter which it contains in this condition is held by it with great tenacity, and the further processes by which it may be obtained of various shades up to whiteness are so difficult, troublesome and expensive that they more than double the cost of production. This bleaching may be accomplished in various ways to a certain extent; but to get the acid quite white, Kolbe recommends that it be converted into an ether, and this ether be again decomposed. In the writer's practice, no good plan of decolorizing has as yet been reached, and as the decolorizing has not yet been shown to be necessary or very useful, no great attention has yet been given to it. The acid imported from Germany at very high prices is occasionally quite white; but most of that sold at the more moderate prices of two to three dollars per ounce is of various degrees of whiteness, up to a very light cream color with a reddish tinge. These varying shades of color seem to show that bleaching processes, more or less effective, have been used with all the acid yet imported into this country; while, so far as known, none has been made here until the writer lately undertook it. Hence, the entirely natural or entirely unbleached acid has not, so far as known, been yet used to any considerable extent; and it is a mere reasoning process, based upon the quantity and qualities of the coloring matter in the well made unbleached acid, by which it is inferred that for most if not for all of its present uses, this is as good as the more or less bleached product. If the well made unbleached acid be found to subserve all the useful purposes to which the substance may be applicable, as is confidently expected by this writer; and if the substance should, even in moderate degree, realize the expectations of its importance in the arts and in medicine, as indicated by the European authorities, the process of Kolbe will make it practically attainable in the necessary qantities at a far lower cost; whilst without some such process it would be of very limited use to mankind, whatever might be its powers. Whether bleached or unbleached, the acid is in minute broken acicular crystals, which give it the appearance of a granular powder, soft and smooth under the pestle or knife, but somewhat rough or resinous when rubbed between the fingers. This powder is odorless and nearly tasteless. It has, however, a sweetish and astringent after-taste with slight acridity in the fauces, but none in the mouth; and though tasteless, it leaves a disposition or inclination to expectorate, which continues for some time.

It is practically insoluble in cold water, but is very soluble in hot water; and the water of a hot solution retains when cold, in proportion to its coldness, from about one part in two hundred and fifty to one part in five hundred of the solution. The presence of various neutral salts in small proportion in the water render it far more soluble. Up to this time phosphate of sodium seems to have been chiefly used in Germany[1] to render it more soluble in water for medicinal purposes, and it is said that three parts of phosphate of sodium will render one part of the acid easily soluble in fifty parts of water. It is much more soluble in alcohol and ether than in water. It melts at about 125° C.=257° F., and sublimes at about 200° C.=392° F[2]. In common with other similar acids it forms salts with the principal bases, but these seem thus far to be difficult to make, and their effects have not been investigated.

It is used for medical and surgical purposes either dry or in solution. When used dry it is sprinkled on wounds, ulcers, or dressings in the form of very fine powder, in very small quantities, either simply powdered or mixed in various proportions with some diluent, such as starch. When used in simple solution, either for spraying surfaces or for washes or gargles, it is used in tepid solution of about one part to three hundred parts of water. Where stronger solutions are required for washes, gargles, or to moisten dressings, one part of the acid and three parts of phosphate of sodium to fifty parts of water have been used. When applied to wounds, it appears immediately in the urine[3].

Its alleged advantages over all other antiseptics are: First, that it is far more powerful and effective in similar quantities; and, secondly, that it is, in all quantities necessary for complete effectiveness, entirely devoid of irritant action upon the living tissues. It is not caustic nor corrosive in any quantity, and never produces inflammation. In large quantities it may be irritant and painful, but yet rarely surpasses a stimulant effect, while it appears to be quite neutral in the very small quantities which are yet thoroughly effective. Thirdly, it is said to reach and prevent processes of decomposition which are beyond the reach of all other antiseptics or antiferments. These processes are of two kinds, namely: vital, or those in which living organisms have an important part, such as

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1, Thiersch. Pharm. Centralhalle, Oct. 22, Nov. 5. 2, Watts' Chem. Dictionary, Art: "Salicylic Acid." 3, Thiersch, as above cited.

that produced by yeast and many of those which occur in putrefaction; and chemical, or those which occur independent of vitality, as the production of volatile oils in mustard and bitter almonds, the effect of diastase, etc. Now, while carbolic acid and other antiferments are azymotic, or completely arrest or prevent fermentations of the first kind, they are powerless with the chemical processes. Salicylic acid is said to be more effective with the vital ferments, and equally effective with the chemical. Fourthly, in quantities said to be thoroughly effective, it is entirely odorless and tasteless and harmless, whilst it has no poisonous effect in any reasonable quantity.

It prevents or arrests the souring of worts, washes and beers of the brewers, and prevents or arrests the putrefactive agencies which are so troublesome and destructive to the glue manufacturers; and these and similar trades have thus far seemed to be its principal consumers. Separate portions of fresh milk set aside to become sour, one to which 0.04 per cent. of salicylic acid was added soured thirty-six hours later than the other. Urine thus protected was on the third day still clear and free from ammoniacal odor.

Varying proportions of the acid added to accurately measured separate portions of sweet milk, and these carefully observed afterward until they sour—or, by the use of meat juice instead of milk, observed closely for signs of putrefaction—would offer good indications of the quantities required to arrest these varieties of fermentation.

Professor Thiersch, of Leipsic[1], used it upon contused and incised wounds, and in operations, with excellent general results, destroying the fetid odor of cancerous surfaces and pyæmic ulcerations. To such uses this writer would add the suggestion that for washing out the cavities of the abdomen and chest after those operations which tend so strongly to septicæmia, solutions of salicylic acid would seem to offer very great advantages, should it prove to be as bland and unirritating as it is stated to be, and yet so effective.

Most of these statements are summed up from the periodical literature of continental Europe during the past six months, little having appeared upon the subject in Great Britain, or in this country, and nothing having been done with it, so far as known, in either country.

In occasional paragraphs and allusions benzoic acid has been coupled with salicylic acid, as being only second to it in effectiveness as an antiferment, and with similar advantages.

These statements are collated and condensed here as being well worth attention in themselves and in their relations to the phenomena of septic poisoning as already known. But they have a new significance, or at least suggest to this writer a new train of thought, when viewed in connection with some researches now in progress and but just appearing in the periodical literature.

Experiments[2] were made upon animals by the injection of measured quantities of septic blood. The blood of a healthy animal was allowed to become putrid. Increasing doses of this were injected into healthy animals until the amount necessary to cause death was ascertained. This quantity proved to be large, the animals recovering from all the small doses. Blood from the animal whose death was caused by injections of putrid blood was injected in increasing doses into healthy animals until the fatal dose was reached, and this dose was found to be smaller than that which killed the first animal. The blood of the second dead animal was used on healthy subjects in the same way as that of the first, and proved fatal in still smaller quantity. The experiments were continued upon the same plan until finally a point was reached when a very minute portion—the fraction of a drop, perhaps—from the last animal proved fatal to the next, with more violent toxic symptoms and a shorter course. The important indications of this series of experiments is, of course, the rapid accumulation of potency in septic poisoning. And the question put by this indication is not only as to how this potency accumulates, but also how to prevent and arrest it. Metro-peritonitis and common pyæmia would doubtless, unobstructed, accumulate potency in the same way without visible inoculation, and often do continue and accumulate even against the vigorous application of the best means of prevention yet known. No hypothesis can be constructed that will embrace the phenomena of septic poisoning, as they are now rapidly being investigated without including zymotic diseases and the cachexiæ, and none will account for the phenomena already observed without bringing it within the sphere of what is called, in some of its degrees or phases, fermentation. Hence, if the medical art is to keep pace with the progress of the physical sciences, physicians can not afford to pass by such articles as salicylic and benzoic acids when offered by chemistry, without investigating their effects upon disease, even though not one out of ten should repay the labor of investigation; for it is certainly in this direction of research that medicine must look with greatest hope of success to control those abnormal vital processes which so far may be modified but not stopped. For example: Suppose a primary syphilitic or cancerous sore, or a diphtheritic patch, or even a cachectic pulmonary infarction, while these are merely the localized phenomena of an external inoculation, or of an internal taint,—they must all be considered to partake of the nature of a fermentation, and by some such process invade the whole organism. Then suppose an antiferment which, when applied to any surface not covered by an impervious cuticle, very soon appears, unchanged, first in the blood and then in the secretions and excretions—the manifest logical antagonism of such substance to the diseased conditions becomes too important to be neglected, and the counsels of wisdom demand that its claims to such antagonism be disproved before it be dismissed. The question as to what may become of the cancer-cell, or of the less tangible precedent cause of it, or of the bacteria, or the precedent conditions which increase their fertility, under the well directed influence of this class of agents, is, perhaps, the most important one in all medical science. And just in proportion as accurate research develops agents of greater and greater power, will be the prospect of better success in treatment.

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[1] Pharm. Centralhalle, Nos. 44 and 45, 1874.

[2] Bergman, Panum, Davaine, Vulpian and Bouley—the latter researches in Bulletins de l'Acad. de Med. 1872, 1873, and Davaine, translated by Mary C. Putnam. M. D., in Archives of Scientific and Practical Medicine, by C. E. Brown-Sequard and E. C. Seguin, No. 5, p. 469.

The phenols, especially the so-called carbolic and cresylic acids (Phenol and Cresol), were and must always remain to be most important additions to this class of agents, surpassing in power all that had been previously tried. And if now salicylic acid shall prove more potent than the phenols, the farther gain will be very great, and the researches upon it will again lead up toward future discoveries of still greater power.—*Read before the Medical Society of the State of New York.*

CARNAUBA ROOT.

BY CHARLES SYMES, PH. D.

Two bales of this root have been imported into Liverpool, with the following remarks:

"The root is recognized by the profession as an excellent purifying agent, and has been successfully applied in the cure of various diseases arising from impurity of the blood. We are indeed astonished that it is not more widely known, as its therapeutic qualities, which are worthy of full credence, rival those of sarsaparilla. The carnauba root, likewise, has a diuretic power and possesses unusual efficacy in the cure of acute or chronic blennorrhœas. It is, furthermore, very cooling, and displays a vigorous action in purifying the blood."

The root is that of *Corypha cerifera*, a wax-bearing palm, growing on the shores of the Rio Francesco, in the Brazils; it is several feet in length, and has an average thickness of three-eighths of an inch, of a mixed grayish and reddish-brown color, giving off here and there small rootlets.

The cortical portion is comparatively thick, somewhat friable, and loosely surrounds the meditullium which encloses the pith; thus, a transverse section somewhat resembles, in appearance, an exogenous stem. Its infusion is similar in color to that of wild cherry bark, possesses an agreeable, slightly bitter taste, and an odor not unlike that of sarsaparilla; its color is slightly deepened, but no precipitate occurs on the addition of liq. potassæ, neither on the addition of dilute acids. Tinct. ferri perchlor. does not strike a black, but brownish color, gradually followed by turbidity and the formation of a brown deposit. The decoction is not affected by iodine, indicating the absence of starch; a drop of it concentrated on a porcelain slab and treated with strong sulphuric acid, produces an olive green, slowly changing to a brown color. It yields twenty-five per cent. of a reddish-brown extract possessing a decidedly bitter taste.

It awaits further medical testimony in this country; should it prove equal to the particulars given, it will be a valuable medicine, and possesses the advantage of an almost unlimited supply, at (I am informed) about one-half the cost of sarsaparilla.—*London Pharm. Journal.*

Pipe clay rubbed on the hands will remove the unpleasant odor of chloride of lime.

The germination of seeds can be watched at every stage of its progress by laying the seeds between moist towels and placing the latter between plates. The towels can be lifted without damage to the tender sprouts.

AN ESSAY ON THE ACTIVE CONSTITUENTS OF BITTER ORANGE-PEEL, WITH SPECIAL REFERENCE TO THE BITTER PRINCIPLE.

BY RICHARD H. STABLER, M. D., ALEXANDRIA, VA.

The prevalence of volatile oil dispersed over all parts of the plants of the natural order Aurantiaceæ, or citron worts, of Lindley, is a distinguishing characteristic. They resemble the rue worts, in the abundance of volatile oil pervading the genera, but differ from them in their consolidated, juicy fruit. The leaves abound in a volatile, fragrant, bitter, exciting oil, contained in separate oily receptacles; the pulp of the fruit is always more or less acid.

Two varieties of orange-peel are used in medicine, the sweet orange, the product of Citrus aurantium, and the bitter or Seville of C. vulgaris, of De Candolle.

The constituents of orange-peel are volatile oil, a crystallizable principle (Hesperidin of Lebreton), and in bitter orange-peel, an uncrystallizable principle, or extractive, of a very bitter taste (Aurantiin of Pereira), and traces of gallic acid.

Volatile Oil.—The oil of orange-peel is obtained by expressing the lacerated rind of sweet or bitter orange, or by distilling the rind or expressed oil with water.

The oil obtained by expression is less clear, of sp. gr. 0.856, and more agreeable than that obtained by other means. When distilled, it is clear, very mobile, white at first, becoming pale-yellow or greenish-yellow; it boils at 165° C.

The oil obtained by expression is always colored, much more so than that obtained by distillation. The expressed oil is less pure, because it holds in suspension or solution mucilage and other fixed substances.

This oil is isomeric with oil of turpentine, $C_{10}H_{16}$, as are similar oils from other aurantiaceous plants, C. bergamia, C. limetta, C. limonum, etc.

Oil of Neroli, obtained from orange flowers by distillation with water, is probably of the same nature when pure (F.).

When kept in closed vessels it deposits crystalline, easily fusible, volatile clots, soluble in water, and alcohol; the oil ultimately turns viscid and brown (Gaubius).

With iodine it gives off yellowish-red vapors with great violence, assuming a resinous consistence.

By nitric acid it is converted into a brittle resin.

Oil of vitriol colors it dark reddish-brown. The oil of orange-peel, besides its odor, is distinguished from oil of turpentine by rotating the ray of polarized light to the right and not to the left. This is true also of the oils of limes, cedrat, bergamot, etc.

When exposed to hydrochloric acid it combines with it, forming two compounds; one the dihydrochloride, $C_{10}H_{16},2HCl$, existing in a solid and a liquid modification; and a monohydrochloride, $C_{10}H_{16}HCl$, apparently susceptible of similar modifications.

With water it forms a crystalline hydrate. It is soluble in all proportions in anhydrous alcohol, and with turbidity in seven or ten parts of alcohol, sp. gr. 0.85.

Hesperidin.—The crystallizable principle, which resides more especially in the white spongy portion of the rind of the fruits of the genus Citrus, was discovered by Lebreton in 1828, the juice which exudes when cutting through the fruit being rendered milky by hesperidin. It occurs abundantly in the germs of orange-blossoms, but not in the petals or filaments.

Hesperidin was obtained by Lebreton from unripe oranges, by a complicated unproductive process. In a paper read before the Physiological Society by Dr. Cogswell, in 1854, and quoted in the *American Journal of Pharmacy* of that year, p. 552, he has found it was deposited in crystals by evaporating a decoction of the white portion of the rind, while in the same portion of the shaddock, C. decumana, it was separated by simple maceration in cold water, and could be collected in a filter.

The alcoholic tincture yields on evaporation a very bitter granular extract, which on standing for a week with twenty times its weight of water, or distilled vinegar, gradually deposits crystalline hesperidin. Purification is effected by recrystallization from hot alcohol.

When unripe oranges are preserved in vinegar or alcohol of 22° B., hesperidin crystallizes at the bottom of the vessel.

Hesperidin occurs in delicate, silky tufts of needles, grouped in nodules, which are odorless and tasteless when pure, though they usually possess slight bitterness, probably owing to the adherence of another substance.

Hesperidin melts above 109° C., and solidifies on cooling to a brownish-yellow transparent mass, and does not again crystallize from alcohol. When submitted to dry distillation it does not yield ammonia, but leaves a porous charcoal. In cold nitric acid it assumes a yellowish-red color, and dissolves when heated, with formation of oxalic acid and a little yellow artificial bitter.

Strong sulphuric acid turns hesperidin first orange-yellow, afterwards bright-red.

In strong hydrochloric acid hesperidin acquires a greenish-yellow color, which is destroyed by water. Hydrochloric or sulphuric acid, when added in excess to the alkaline solution of hesperidin, and then boiled, a deep orange-red resin is deposited, which is soluble in water; insoluble in alcohol; soluble in oil of vitriol with rose-color; in ammonia with greenish-yellow, and in caustic alkali with deep-red color.

Hesperidin is nearly insoluble in cold, soluble in sixty parts boiling water, which deposits three-fifths of the amount dissolved on cooling. It is insoluble in dilute sulphuric or hydrochloric acid, but easily soluble in aqueous fixed alkalies; also in aqueous ammonia; remaining free from ammonia on evaporating the solution; it is precipitated from the alkaline solution by acids; it forms with lime a soluble compound, precipitable by alcohol. The aqueous solution of hesperidin does not precipitate neutral or basic acetate of lead; it dissolves slightly in cold, and feeely in hot glacial acetic acid; the solution is not rendered turbid by water, but is precipitated by alcohol; it leaves hesperidin free from acetic acid on evaporation; it dissolves very sparingly in cold, very easily in hot alcohol;

the solution is rendered only slightly turbid by water; it is insoluble in cold and hot ether, and in volatile and fat oils (Lebreton). This principle is probably without activity as a medicine.

The Bitter Principle.—The mother-liquor of hesperidin contains in solution the bitter uncrystallizable extractive principle of orange-peel, which is obtained on evaporation as a brown extract, which, when prepared in scales, by evaporation of the liquid on sheets of glass, soon becomes soft and adherent by exposure to the atmospheric moisture.

In distilled water this substance is readily and entirely soluble, forming a clear, light-brown solution. Solution of persalts of iron change it to dark reddish-brown; it is colored bright-yellow by ammonia; it is not precipitated by gelatin; very soluble in dilute alcohol, less so in strong alcohol (93° Tralles); insoluble in ether, chloroform, purified benzin, and oil of turpentine. Acetic acid (No. 8) dissolves it, but destroys its bitter taste.

It is this bitter extractive principle (aurantiin), evidently, that imparts the active tonic properties to the bitter orange-peel.

The aromatic and carminative properties possessed by both the sweet and bitter orange-peel is communicated by the volatile oil pervading the external layer.—*Proceedings American Pharmaceutical Association*, 1874.

CHEMISTRY OF THE TAR ANTISEPTICS.*

To the Editor of the Pharmacist—*Sir:* I notice in your last impression a partial reprint of a paper entitled "The Chemistry of the Tar Antiseptics," read by Mr. W. E. Bickerdike, before the Liverpool Chemists' Association, December 17, 1874. The author, I see, admits the subject matter to be but imperfectly described by the title of his paper, and as the information he has attempted to convey seems to me to be equally misleading, I trust you will allow me a space in your valuable journal, to draw attention to a few of the points on which correct information might have been of real value to your readers.

In describing the preparation of crude carbolic and cresylic acids, Mr. Bickerdike begins by giving a very much too general outline of the process of coal gas tar distillation. Coal gas tar differs so much in character from the relative proportions present of products solid or fluid, at natural temperatures, that no one process of distillation and separation is applicable to them generally.

So much so is this the case that, to take an example, from Manchester coal gas tars the bulk of the mixed crude carbolic and cresylic acids is extracted from the "light oils," while from the London coal gas tars the bulk of the mixed crude carbolic and cresylic acids is obtained from the heavy oils or creosote, stated by Mr. Bickerdike to contain cresol only, and to be employed without further treatment for saturating railway sleepers.

Mr. Bickerdike proceeds to state, "The further separation of phenol and cresol from the crude liquid is effected by repeated fractional distillation, assisted by crystallization of the phenol, from which the liquid cresol can be removed mechanically." Should Mr. Bickerdike employ no other means of purification than those described in his paper, I can only state that neither the phenol nor the cresol so obtained is fit for surgical use or disinfection, containing, as they would, free sulphur, many sulphuretted compounds, tar bases, etc. Neither does the phenol constitute the B. P. quality first introduced for surgical and disinfecting purposes by my former partner, the late Dr. F. Crace Calvert.

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* For publication in reply to the copy of Bickerdike's paper, in your February number.—C. L.

Mr. Bickerdike next proceeds to describe pure carbolic acid, or, as he calls it, absolute phenol, and any one reading the text of his paper would suppose it a description of a product newly obtained, manufactured and first described by him; the fact being, that the product in question is well known in the trade, being manufactured by our firm and by that of F. C. Calvert & Co., under the protection of letters patent, by the ton, and that full descriptions of the product and process of its manufacture were published simultaneously by the late Dr. F. C. Calvert and writer in 1867. Mr. Bickerdike's partner, Mr. Bowdler, (a chemist for some time in the employ of the late Dr. Calvert,) should have been able to give him more correct and extended information with regard to pure carbolic acid and its properties than displayed in his paper. Dr. Calvert gives the boiling point of pure phenol as 182° C.; Mr. Bickerdike, as 184° C. Writer's results agree with those of Dr. Calvert; and he can further add, that those two degrees of difference in boiling point indicate a material impurity in the acid boiling at 184° C., in a scientific point of view.

As regards the non-deliquescent properties of pure phenol, Mr. Bickerdike does not seem to have recognized the fact that pure phenol attracts moisture from the air like pure cresol; but as the product in the former case is a solid crystalline hydrate at natural temperature, and in the latter case a liquid hydrate, the physical result of the action of moisture on a mixture of the acids must necessarily be more apparent than that shown by the pure phenol. With respect to Mr. Bickerdike's discovery (?) of "Granulated Phenol," probably most dispensers will have found it convenient to grind up in a mortar a portion of their stock of the pure phenol, but not advisable to prepare any great bulk in this state, as a summer temperature would certainly re-convert it into an adherent mass by a process of semi-fusion and regelation.

Mr. Bickerdike states that "when phenol is heated with certain metallic oxides and an alkali rosolic acid is produced."

This statement is absolutely incorrect, no such product being formed, as proved by Cäro years ago, who showed that the results obtained by Drs. Smith and Jourdin were due to the oxidation of the mixture of carbolic and cresylic acids constituting the impure acid used in their experiments, and that pure carbolic acid, under the conditions above referred to, yields no rosolic acid. Mr. Bickerdike's description of the manufacture of rosolic acid, (named aurine by writer when first introduced by him as a dye stuff,) and its properties, is not much less incorrect. As regards the manufacture, it is really prepared by the prolonged action of heat (with a subsequent washing, etc., of the mass obtained) on a mixture of carbolic, oxalic and sulphuric acids, in which the greater proportion of the carbolic acid is uncombined, or at least not present as sulphophenic acid.

Mr. Bickerdike's statement that "by the removal of unchanged phenol from the aurine of commerce it may be obtained in a crystalline state" is also incorrect. The researches of Messrs. Dale and Schorlemmer on aurine have fully proved that the residue thus obtained would contain a very high percentage of other products, some being even colorless.

With regard to the manufacture of picric acid, it is now seldom, if ever, prepared by the direct action of nitric on carbolic acid, as described by Mr. Bickerdike, but by the action of nitric acid or nitrates on sulphophenic acid, either in water or sulphuric acid solution, with subsequent boiling, washing and crystallizing process.

The above remarks will sufficiently indicate the crude, misleading nature of the information contained in the paper under review; and trusting their object will be sufficient apology for trespassing on your valuable space and the time of your readers,

I am, sir, yours, etc., CHARLES LOWE.

MANCHESTER, February 3, 1875.

THE CHEMISTRY OF THE "TAR ANTISEPTICS."

SIR: In the *Pharmaceutical Journal* of the 13th inst. a letter appears by Mr. C. Lowe, which contains some strictures on a paper of mine on the chemistry of the tar antiseptics, published in your issue of the 9th ult. I should not have noticed a communication so manifestly biased, were it not that the statements made therein, whilst professing to correct error and convey true information, are in reality of a most careless and unguarded character.

Mr. Lowe states that I began by giving a much too general outline of the process of coal gas tar distillation. In other words, if Mr. Lowe had had the conduct of the paper he would have occupied the time of the evening with discursive and needless details upon matters indirectly connected with the subject in hand. My time being limited, it was necessary to give most of the processes in outline only, and Mr. Lowe's insinuation that the phenol I described might contain various impurities is inconsistent with the words I used, and is, I fear, suggested by something other than a desire to convey correct information. Several instances occur where the ideas objected to are not found in the words I employed. Mr. Lowe builds a structure of imaginary errors by spelling me backwards a little, and then manfully charges at them and dissipates them. Of this character is the charge that I claim the merit of having discovered pure carbolic acid because I recommended a name less misleading than the term acid. The phrase "absolute phenol" was proposed, and the granular form of this product suggested by me as likely to prove useful, and the suggestion has been amply justified. To the discovery of pure carbolic acid I made no claim, for the reason (sufficient for me) that I did not discover it. The idea is not suggested by my paper, but is the offspring of Mr. Lowe's ready invention.

Mr. Lowe, for the most part, avoids the actual subject of the paper, and points to the necessary want of detail in matters that are briefly named: He objects to my process for preparing rosolic acid, and states that the greater portion of the phenol is not present as sulphophenic acid. I can only say that if Mr. Lowe does not bring the greater portion of the phenol into that form he works in a crude and wasteful manner. My statement that rosolic acid could be obtained in a crystalline form from the aurine of commerce when freed from (not "by the removal of," as Mr. Lowe misquotes) excess of phenol, is described as incorrect. Without wishing to give the "reply churlish," I will merely repeat my statement. I referred at Liverpool to Messrs. Dale and Schorlemmer's paper for the details which, as in other cases, it was impossible to enlarge upon. With reference to the non-formation of rosolic acid under the conditions described by Smith and Jourdin, I accept the more recent results of Cäro.

Mr. Lowe is also querulous on the process given for producing picric acid, although it is strictly accurate; but, for reasons already given, the modifications and minutiæ necessary for economic production on a manufacturing scale were not described in detail.

Mr. Lowe approaches the actual subject of the paper where he treats of my description of pure phenol—and here, at last, two statements which I have distinctly made, are distinctly impugned and correct information volunteered. I state that the boiling point of pure phenol is 184° C., whilst Mr. Lowe states it to be 182°; and further adds, that these two degrees of boiling point indicate a material impurity in the acid boiling at 184° C. In another place Mr. Lowe refers to Messrs. Dale and Schorlemmer as trustworthy authorities, and I should be equally willing to accept their statements on a scientific point. In the *Journal of the Chemical Society* for 1873, p. 441, these gentlemen, in speaking of their experiments on aurine, say, "We therefore prepared the coloring matter from pure phenol, boiling quite constantly at 184° C., and melting at 42°, a large quantity of which was kindly placed at our disposal by Messrs. Chas. Lowe & Co." Mr. Lowe must either admit that 184° is the correct boiling point, or that his "pure" phenol contains a material amount of impurity.

I also stated that pure phenol is not deliquescent, and this statement is improved by Mr. Lowe as follows: "As regards the non-deliquescent properties of pure phenol, Mr. Bickerdike does not seem to have recognized the fact that pure phenol attracts moisture from the air like pure cresol, the hydrate in the one case being solid and in the other case liquid at ordinary temperature," etc. I certainly do not recognize the similarity which Mr. Lowe describes; the absorption of moisture in the case of phenol being extremely slow as compared with cresol, and the non-deliquescence of pure phenol is one of its most conspicuous properties, distinguishing it from the qualities contaminated with cresol.

The above remarks, which include all the objections enumerated, will enable your readers to estimate the value of Mr. Lowe's critical method, which would doubtless be more effective if it were rather more guarded and less impetuous.

W. E. BICKERDIKE.

EAGLE CHEMICAL WORKS, CHURCH, NEAR ACCRINGTON,
February 16, 1875.

—*London Pharm. Journal.*

GLEANINGS.

Percentage Yield of Extracts from Medicinal Plants.—Mr. Dankwortt, chairman of the committee of the *Meurer's-Prize*, reports in the February number of the *Archiv der Pharmacie*, that the first prize had been awarded to the apprentice Otto Wick, for the following table, in which he has given the average amount of extracts obtained from the respective plants when following the directions and processes of the *Pharmacopœa Germanica:*

Extractum	Aurantii Cortices	30.	per cent.
	Belladonnæ	3.5	“
	Calumbæ	10.5	“
	Centaurei	24.	“
	Chamomillæ	25.	“
	Chin: fusc: frig: par:	12.	“
	Conii	3.	“
	Digitalis	4.	“
	Ergotæ	16.	“
	Graminis	26.	“
	Hæmatoxyli	11.5	“
	Hyoscyami	3.	“
	Liquiritiæ Radicis	30.	“
	Millefolii	25.	“
	Myrrhæ	50.	“
	Pulsatillæ	4.5	“
	Quassiæ	5.	“
	Sabinæ	23.	“
	Senegæ	24.	“
	Stramonii	3.	“
	Valerianæ	24.	“

E. Masing has contributed to the *Archiv der Pharmacie* an exhaustive essay on the resins of the *Larch Agaric* (Polyporus Officinalis Fries). The following is the resume of the examination:

First.—The resinous mixture extracted by alcohol 95 per cent. consists of at least four distinctive resins, which can be separated by the following methods: The resinous portion having a yellowish-white color, and being but slightly soluble in cold alcohol, is again separated, by digestion with chloroform, into two separate resins. That which is soluble in the chloroform has the chemical composition of $\times(C_6H_{10}O)$; has a melting point at about 90° C.; and is soluble in alcohol$=1:130$.

The resinous mass of a red color and great solubility in 95 per cent. alcohol ($=1:22$) has the composition of $C=69, 16$; $H=9, 44$; and $O=21, 40$. This body is also readily soluble in alcohol of 70 per cent., and can, to a great extent, be easily precipitated from solution by water. This demonstrates that this is at least composed of two resinous bodies. The portion which is soluble in the water has the equivalent composition $C=61, 91$; $H=8, 11$; $O=29, 98$; its solubility in alcohol being$=1:58.8$; solubility in distilled water$=1:590$.

Second.—The resinous mixture undergoes a chemical change when subjected to a continuous boiling in contact with hydrate of lime. When chlorhydric acid is added to the clear filtrate a precipitate is produced, which is again separated into two bodies by the solubility in chloroform. The portion that is insoluble in chloroform has the formula: X ($C_{39}H_{63}O_4$); its solubility in alcohol being=1:165. The soluble portion of the resin has the composition: X ($C_{35}H_{52}O_6$) solubility in alcohol=1:47, 8. Both of these resinous bodies have a higher per cent. of carbon than that of the white resin of the agaric. The portion of the red resinous mass which remained insoluble and mixed with hydrate of lime, was freed from the lime by chlorhydric acid, and on examination contained a lower per cent. of carbon than that of the red resin.

Third.—The white resin of the agaric is tasteless, while that of the red resin is, after careful purification, intensely bitter, and without question is the bitter principle of the agaric.

Fourth.—The resinous mixture of agaric contains no principles that can be changed into a saccharine body through the agency of an acid.

Fifth.—Among the products of destructive distillation of the resins of the agaric is that of *umbelliferon.*

Sixth.—Cold nitric acid exerts but slight action on the resins. When heat is applied the productions are principally *picric* and *succinic acid.*

NEW PROCESS OF MANUFACTURE OF FATTY ACIDS.—M. Bock has demonstrated that the greater part of the neutral fatty bodies are composed of small fat globules contained in albuminous envelopes of from 1 to 50 per cent. of the weight of the bodies. The excesses of alkali, of pressure or of heat necessary to decompose these bodies are in reality applied in order to destroy or eliminate the albuminous envelopes.

The coloring matter of the fatty bodies, or that which forms during their decomposition, is attributed to the envelopes, and for this reason M. Bock proposes to break or partially destroy the latter by the action of a small quantity of sulphuric acid at a determinate temperature and during a limited time. The fatty matter is then boiled with water for several hours, in open vessels. The water charged with glycerin is then decanted, and the glycerin separated.

It remains then to remove the albuminous envelopes and the coloring matter, which is done by submitting the material in the vessels to the action of weak solutions of oxidizing agents. When the reaction has continued for a sufficient period, the substance is left quiet, and subsequently decanted, washed and pressed.

One of the advantages of this process, according to the inventor, is that all the operations are performed in open vessels, the contents of which are raised to ebullition by steam, not exceeding in pressure 37 lbs. per square inch.

CANTHARIDIN.—According to Galippe (Journ. de Pharm. et de Chim.), acetic ether is a better solvent than chloroform for the extraction of cantharidin from the flies. He suggests the process of percolation, and the employment of two parts of acetic ether to one part of the powdered flies. He also recommends that the percolation be conducted at a temperature of about 95° F., which aids the solvent in its work of extraction.

The acetic ether is recovered from the percolate by distillation, and the green fatty matter which envelopes the crystals of cantharidin is removed by spreading the residue upon filtering paper and washing the crystalline mass with bisulphide of carbon,* after which the crystals are further purified by resolution in acetic ether, passing through animal charcoal and set aside to crystallize.

JUTE.—The jute of commerce, which has of late years been largely used in the manufacture of carpets, matting, bagging, etc., is chiefly obtained from two species of *Corchorus; C, capsularis* and *C, olitorious*. The plants belong to the order *Tiliaceæ*, of which the Linden or Button-wood tree is a representative in our latitude. They are natives of India, and are extensively cultivated in Bengal. The *C. capsularis*, that is the more valuable of the two, yields a fibre (the inner bark) sometimes twelve feet in length, which is strong and durable. Its liability to injury by moisture unfits it for the manufacture of cordage, and the difficulty with which it is bleached renders it unsuitable for making paper except of a coarse quality. But its value as a material for carpeting and such heavy fabrics has caused a vast trade to spring up. Nearly every producing country imports either jute, or gunny-bags made from it. Jute bags are used for the cottons of India and America, and for the spices, fruits and miscellaneous produce of other counties.

EXTRACTS.

Save the soot that falls from the chimneys when the latter are cleaned. Twelve quarts of soot to a hogshead of water makes a good liquid manure to be applied to the roots of plants.

The simplest, and perhaps best, paint to prevent buried wood from decaying, is made of boiled linseed oil, into which charcoal is stirred until the whole is of proper consistency. Apply with an ordinary paint brush.

To remove clinkers from stoves and ranges, mix a few oyster shells with the coal, or put them upon the coals while the fire is burning freely. An occasional application of this kind will keep the grate free and the cook good-natured.

Two thicknesses of paper are better than a pair of blankets, and much lighter for those who dislike heavy bed-clothes. A spread made of double layers of paper tacked together, between a covering of chintz or calico, is really a desirable household article.

To remove soot, and other finely-divided substances that mechanically stain, by entering the pores of the skin, rub over with some fatty oil, the excess of which is removed by sawdust, bran or corn meal, and supplemented by a vigorous application of soap and water.

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* We would suggest the use of petroleum-benzine as a cheap and efficient substitute for bisulphide of carbon.—ED. PHARMACIST.

To preserve anatomical specimens, immerse in a saturated solution of 100 parts alum with 2 parts saltpeter. The article at first loses color, but regains it again in a few days, when it is removed from the liquid and kept in a saturated solution of alum and water only.

To silver the inside of hollow glass vessels, globes, convex mirrors, etc., the following amalgam, which becomes fluid at a low heat and adheres to glass, may be used: Lead and tin, of each 2 ozs.; bismuth 2 ozs.; mercury 4 ozs. Add the mercury to the rest in a melted state, and remove from the fire. Mix with an iron rod.

PRIZES FOR CHEMICAL DISCOVERIES.—The following prizes for chemical discoveries are offered by the *Societe d' Encouragement*, Paris: Disinfection and prompt clarification of sewage, $200, 1875; Ink not attacking metallic pens, $200, 1875; economical production and application of ozone, $600, 1875; fixation of atmospheric nitrogen, either as nitric acid, ammonia or cyanogen, $400, 1876; artificial production of graphite, suitable for lead pencils, $600, 1877; artificial preparation of a compact black diamond, $600, 1877; industrial application of oxygenated water, $400, 1878.

The following alloy of copper will attach itself firmly to surfaces of metal, glass, or porcelain: 20 to 30 parts finely blended copper (made by reduction of oxide of copper with hydrogen or precipitation from solution of its sulphate with zinc) are made into a paste with oil of vitriol. To this add 70 parts mercury and triturate well; then wash out the acid with boiling water and allow the compound to cool. In ten or twelve hours it becomes sufficiently hard to receive a brilliant polish and to scratch the surface of tin or gold. When heated it becomes plastic, but does not contract on cooling.

BORACIC ACID.—At a recent meeting of the Chemical Society, Mr. Howard said boracic acid destroyed vegetable growth—grass, for instance—with a vigor and permanence which, if it were a fertilizer, would render it invaluable.

Mr. A. Smee, Jr., had found that, if 1 part of a 10 per cent. solution of boracic acid were added to 8 of milk, it would keep it sweet for a week.

Dr. J. Edmunds, in a complicated case of amputation of the thigh, had employed dressing of lint, steeped in a hot saturated solution of boracic acid, with most satisfactory results, in preventing putrefactive discharge. The bandage could remain for thirty-six or forty-eight hours without the slightest putrefactive odor.

BEE-PRODUCTS.—Dr. de Planta Reichenau, of Munich, is conducting a series of experiments with a view to ascertaining whether honey and the other industrial products of bees are obtained directly from the food of the insects, or are substances elaborated by the organism. The investigation is still incomplete, but the presence of nitrogen in honey, a fact which has been questioned, is now established, although in the minute proportion of 0.0781 per cent. This nitrogen occurs in three distinct forms: as an albuminous substance coagulable by heat, and as two other nitrogenous bodies, one soluble and the other insoluble in alcohol. The latter substances are found in nectar, but the coagulable albumen, not occurring in the juice of the flowers, is referred by the author to a secretion of the bee, which becomes mixed with the nectar. Honey is, therefore, strictly a nitrogenous body, and not simply a carbo-hydrate. In purified beeswax nitrogen was found to the extent of 0·597 per cent.

CEMENTS FOR AQUARIA.—Melt together two parts of common pitch with one of gutta-percha, incorporating them well. This is to be poured while soft (but not too hot) into the joints. It may also be applied with a hot iron in the same manner as solder. A second preparation consists of two parts of zinc-white and one of copal varnish. And a third, of eight parts of common resin with one of colcined plaster, to be melted and incorporated, then adding one part of boiled oil. This is to be applied warm.

M. Henri Parville announces that certain explosive substances may be caused to detonate by mere vibrations, this action being produced in iodide of nitrogen by the notes of a violin and a tom-tom.

Among the so-called lost arts, one of the most deeply lamented has been that of the manufacture of malleable glass, said to have been known to the ancients, but the secret of which has long since perished. It is stated that a French experimenter has lately succeeded in re-discovering this art, and is making glass which, instead of being brittle, is as ductile as copper or iron, and that he has already begun to erect a building for the manufacture of the glass on a large scale.

THE VOLUME AND WEIGHT OF DISTILLED WATER AT DIFFERENT TEMPERATURES.

BY RICHARD H. BUEL.

In general, water expands when heated, and contracts on being cooled —with the exception that the greatest contraction occurs when the water has a temperature of about 39° Fahr., so that expansion takes place whether the temperature is decreased or raised above this point. The precise temperature at which water attains its maximum density has not been accurately determined. The differences between the results obtained by independent investigations are, however, very slight, and the point of maximum density is commonly taken at 39·2° Fahr., or 4° on the centigrade scale. At this temperature the weight of a cubic foot of distilled water, as determined by the best authorities, is 62·425 lbs.; the weight of a United States gallon is 8·379927 lbs., of an imperial gallon, 10·05312 lbs., and of a cubic inch, 252·8787 grains. In French measures, it is usually assumed that a cubic decimeter of distilled water weighs 1 kilogramme. This is not strictly accurate, owing to a slight error in regard to the weight of water of maximum density, which was made at the time of fixing the measure, and the absolute standard is the liter, which is a volume of a kilogramme of pure water at the temperature of maximum density. In practice, however, the volume of a liter is commonly assumed to be one cubic decimeter, and the error arising from this assumption is unimportant, being less than 0·00002 of a kilogramme. The expansion of water by heat is not regular for equal increments of temperature, but the law of the expansion has been determined by numerous experimenters, the most prominent of whom are Kopp, Matthiessen, Sorby, and Rosetti. The formulas constructed from their experiments are given below, being taken from Watt's "Dictionary of Chemistry."

Let V=ratio of a given volume of distilled water, at the temperature, T, on Fahrenheit's scale, to the volume of an equal weight, at the temperature of maximum density.

W=weight of a cubic foot of distilled water, in pounds, at any temperature, Fahrenheit.

For temperatures from 32° to 70° Fahr.: $V=1{\cdot}00012-0{\cdot}000033914\times(T-32)+0{\cdot}000023822\times(T-32)^2-0{\cdot}000000006403\,(T-32)^3$.

For temperatures above 70° Fahr.: $V=0{\cdot}99781+0{\cdot}00006117\times(T-32)+0{\cdot}000001059\times(T-32)^2$.

$$W=\frac{62{\cdot}425}{V}$$

The table given below has been computed by the aid of these formulas. The experiments on the expansion of water have not been carried beyond a temperature of 412° Fahr., so that the results given in the table for higher temperatures have not been verified. It is not probable, however, that they are greatly in error. The highest temperature in the table corresponds to a pressure of saturated steam of more than 1,000 lbs. per square inch. The successive increments of 10° Fahr. give such slight changes in the successive differences in relative weights and volumes as to render interpolations by proportion sufficiently accurate for most purposes. The weights given in the tables are for pure water, so that, when water contains foreign matter, it will be necessary to multiply the tabular weight by the specific gravity of the water. For ordinary rain, spring, or river water, the correction is generally so slight that it may be neglected. Below are given the specific gravities of waters from different localities, the most of which have been taken from Professor Chandler's lecture on "Water," published in the thirty-first annual report of the American Institute:

Atlantic Ocean	1·0275
Dead Sea	1·17205
Great Salt Lake	1·17
Mississippi River	1·00068
Croton (New York Water Supply)	1·00008
Ridgewood (Brooklyn Water Supply)	1·000067
Cochituate (Boston Water Supply)	1·000053
Schuylkill (Philadelphia Water Supply)	1·00006
Delaware River	1·000059
Lake Erie	1·000107
Lake Michigan (Chicago Water Supply)	1·000113
Genesee River	1·000226
Passaic River	1·000127
Thames, at London	1·000279
Seine, above Paris	1·000151

It will be seen from these figures that, for most cases, it will be sufficiently accurate to use the weights given in the table. If the weight of a gallon of water at any temperature is desired, it may be obtained by dividing the weight of a gallon of water at the temperature of maximum density, previously given, by the relative volume at the required temperature. It may also be obtained by multiplying the weight of a cubic foot of water, at the given temperature, by 0·13368 to find the weight of a United States gallon, and by 0·160372 to find the weight of an imperial gallon. When water contains foreign matter in solution, its rate of expansion by heat is not exactly the same as in the case of distilled water. There has not been a sufficiency of experiments, however, to determine the law of the variation, and no great error will arise from the assumption that the expansion is in accordance with the formulas given above.

With these explanations, the use of the following table will be rendered plain to the reader.

VOLUME AND WEIGHT OF DISTILLED WATER AT DIFFERENT TEMPERATURES ON THE FAHRENHEIT SCALE.

Temperature, Fahrenheit.	Ratio of volume to volume of equal weight at the temperature of maximum density.	Difference	Weight of a cubic foot in pounds.	Difference.	Temperature, Fahrenheit.	Ratio of volume to volume of equal weight at the temperature of maximum density.	Difference	Weight of a cubic foot in pounds.	Difference.
32°	1·000129		62·417		290°	1.08405	·00596	57·585	·318
39·2°	1·000000	·000129	62·425	·008	300°	1·09023	·00618	57·259	·326
40°	1·000004	·000004	62·423	·002	310°	1·09661	·00638	56·925	·334
50°	1·000253	·000249	62.409	·014	320°	1·10323	·00662	56·584	·341
60°	1·000929	·000676	62·367	·042	330°	1·11005	·00682	56·236	·348
70°	1·001981	·001052	62·302	·065	340°	1·11706	·00701	55·883	·353
80°	1·00332	·001339	62·218	·084	350°	1·12431	·00725	55·523	·360
90°	1·00492	·00160	62·119	·099	360°	1·13175	·00744	55·158	·365
100°	1·00686	·00194	62·000	·119	370°	1·13942	·00767	54·787	·371
110°	1·00902	·00216	61·867	·133	380°	1·14729	·00787	54·411	·376
120°	1·01143	·00241	61·720	·147	390°	1·15538	·00809	54·030	·381
130°	1·01411	·00268	61·556	·164	400°	1·16366	·00828	53·645	·385
140°	1·01690	·00279	61·388	·168	410°	1·17218	·00852	53·255	·390
150°	1·01995	·00305	61·204	·184	420°	1·18090	·00872	52·862	·393
160°	1·02324	·00329	61·007	·197	430°	1·18982	·00892	52·466	·396
170°	1·02671	·00347	60·801	·206	440°	1·19898	·00916	52·065	·401
180°	1·03033	·00362	60·587	·214	450°	1·20833	·00935	51·662	·403
190°	1·03411	·00378	60·366	·221	460°	1·21790	·00957	51·256	·406
200°	1·03807	·00396	60·136	·230	470°	1·22767	·00977	50·848	·408
210°	1·04226	·00419	59·894	·242	480°	1·23766	·00999	50·438	·410
212°	1·04312	·00086	59·707	·187	490°	1·24785	·01019	50·026	·412
220°	1·04668	·00356	59·641	·066	500°	1·25828	·01043	49·611	·415
230°	1·05142	·00474	59·372	·269	510°	1·26892	·01064	49·195	·416
240°	1.05633	·00491	59·096	·276	520°	1·27975	·01083	48·778	·417
250°	1·06144	·00511	58·812	·284	530°	1·29080	·01105	48·360	·418
260°	1·06679	·00535	58·517	·295	540°	1·30204	·01124	47·941	·419
270°	1·07233	·00554	58·214	·303	550°	1·31354	·01150	47·521	·420
280°	1·07809	·00576	57·903	·311					

—*Scientific American.*

COLLATED PRACTICAL RECEIPTS.

ARSENICAL CAUSTIC (RATIER'S).

Take of Arsenious acid, in very fine powder, 1 part,
Kino, " " " 8 parts,
Cinnabar, " " " 16 "
Mix.

BLACK CAUSTIC (VELPEAU'S).

Triturate in a porcelain mortar 30 grains of powdered liquorice root, and add sulphuric acid in small quantities till a suitable mass is formed.

CANTHARIDES CAUSTIC.

Take of Tannin, in fine powder, 1 part,
Cantharides, " " 2 parts,
Strong acetic acid sufficient to form a paste.

ZINC CAUSTIC.

Take of Chloride of zinc............1 part,
Flour..........................2 parts.
Made into a stiff paste with water.

ARSENICAL SOAP (TAXIDERMISTS' USE).

Take of Camphor, in fine powder...............
Arsenious acid, in fine powder.. ..... 1 part of each,
Castile soap, white, in fine powder..
Carbonate of potassium, " " .. 12 parts.
Mix and make into a paste with water. Used in preserving the skins of birds and other small animals.

CHLORINATED SOAP (SAVON ANTISYPHILITIQUE).

Take of Castile soap, in fine powder............11 parts,
Chlorinated lime, dry and good...... 1 part.
Mix, beat them into a mass with sufficient perfumed spirit.

IODINE SOAP.

Take of Castile soap, white..................16 parts,
Iodide of potassium................. 1 part,
Water................................. 3 parts.
Dissolve the iodide of potassium in the water, slice the soap and place in glass or porcelain vessel, and by the heat of a water-bath melt them together.

MERCURIAL SOAP.

Take of Castile soap, in fine powder............32 parts,
Corrosive chloride of mercury......... 1 part.
Dissolve the chloride of mercury in about 8 parts of perfumed alcohol, and beat it with the powdered soap into a uniform mass, in a porcelain or wedgewood mortar.

TAR SOAP.

Take of Tar (wood) .... 1 part,
Castile soap (in shavings)................. 2 parts,
Solution of potassa............................ 2 parts.

Beat them together until they unite.

TURPENTINE SOAP (STARKEY'S SOAP).

Take of Carbonate of potassium..................
Oil of turpentine.......................... } equal parts.
Venice turpentine..........................

Triturate them together, in a warm mortar with a little water, until they combine.

FULIGOKALI (PARIS HOSPITALS).

Take of caustic potassa, 1 part; dissolve in a sufficiency of water; add wood soot, 5 parts; boil one hour; dilute with water and filter; evaporate to dryness, and place in well-corked bottle. Dose, 2 to 3 grains.

HAIR OIL SCENT (CHEAP).

Take of Oil of lavender..........................
Oil of rosemary.......................... } 8 parts of each,
Oil of cloves.................................. 2 parts,
Oil of cassia.................................. 1 part.

Mix.

TRANSACTIONS OF PHARMACAL COLLEGES AND SOCIETIES.

AMERICAN PHARMACEUTICAL ASSOCIATION.

The Committee on the Ebert Prize have made the following report:

"*To the President of the American Pharmaceutical Association:*

"The Committee on the Ebert Prize respectfully report that they have carefully examined the original essays presented at the twenty-second annual meeting of the American Pharmaceutical Association, a number of which contain more or less valuable contributions to pharmaceutical knowledge, and that they selected for their especial consideration the papers offered by Ottmar Eberbach, of Ann Arbor, Mich.; J. Creuse, of New York, and Charles L. Mitchell, of Philadelphia, believing that these approach more nearly to the conditions laid down by the founder of the prize than the others.

"Mr. Eberbach's paper 'On Colchicia' is the result of his investigations undertaken with the view of finding a working process for preparing colchicia for medicinal purposes. The process adopted is based upon that of Geiger and Hesse, but considerably modified, and with the adoption of Dragendorff's suggestion of using chloroform for the extraction of colchicia from the alkaline solution. Since this alkaloid is repeatedly subjected to the influence of free alkali and acid, even at a somewhat elevated temperature, it remains uncertain whether the amorphous yellow scales were pure colchicia or contained some colchicein.

It is to be regretted that the author omitted to prove the acicular crystals finally obtained from a concentrated solution in chloroform to be pure colchicia and not colchicein; which latter, however, according to Hübler and Oberlin, is obtained in an amorphous condition from the chloroformic solution.

"Mr. J. Creuse's essay 'On Iron by Hydrogen' is deserving of commendation for two reasons: first, for establishing the true character of what is usually found in commerce under this name; and, second, for determining the comparative value of the different processes that have been recommended for estimating the amount of metallic iron contained in this preparation. Its quantitative estimation by the amount of hydrogen evolved in the presence of dilute muriatic acid appears to be feasible; but further experiments are necessary to determine the influence which the presence of the various oxides mentioned by the author may exert upon the amount of gas obtainable.

"The paper entitled 'The Active Principles of the Officinal Veratrums,' by Mr. Chas. L. Mitchell, is divided into three parts, entitled 'Botanical,' 'Chemical' and 'Physiological.' In the first part we miss a sufficiently critical account of the botanical origin of Sabadilla seeds; although attributed by the United States Pharmacopœia to *Veratrum Sabadilla*, Retzius, the seed, according to all modern authorities, is obtained principally, if not exclusively, from *Asagræa officinalis*, Lindley. While the close similarity in appearance and structure of the rhizomes of *Veratrum viride* and *album* is particularly dwelt upon in this part of the paper of Mr. Mitchell; the second part does not produce any evidence that it was really and solely the rhizome of the former which was used for the experiments, except what is deducible from his physiological results in Part III., and from the slight differences in the behavior of the two alkaloids obtained—besides jervia—all reactions being essentially identical, except the fusing point, which for veratroidia is given at 265° F., and for veratralbia at 340° F., and the behavior to bichloride of platinum, with which veratralbia is stated to yield no precipitate, while varatroidia produces a flocculent precipitate; but the strength of both solutions has not been given.

"The botanical similarity of the American and European *Veratrums* had long since suggested the idea of the identity of their constituents, and this belief was strengthened by the positive proof of the absence of veratria from both, and by the physiological results of Schroff, which indicate a qualitative similarity, if not identity, of composition. The recent discovery of jervia in *Veratrum viride* by Dragendorff, which result has been corroborated by Mr. Mitchell, furnishes further proof for this assumption.

"The main results of Mr. Mitchell's investigations, as they appear to the committee, on comparison with the results of other investigators, may be summed up as follows:

"1. The alkaloid heretofore named viridia is jervia, and is found in both *Veratrum album* and *V. viride*.

"2. The alkaloids named veratroidia and veratralbia are probably different, though positive proof of this fact has as yet not been adduced.

"3. These alkaloids cannot, probably, be profitably extracted for medicinal use; and,

"4. The pure resins of both rhizomes are nearly, if not entirely, inactive.

"After full deliberation upon all the above points, and considering the labor involved in the experiments of the subject matters of the three papers, the committee award the Ebert Prize of the American Pharmaceutical Association, for the year 1874, to Mr. Charles L. Mitchell for his essay 'On the Active Principles of the Officinal *Veratrums.*'

"In conclusion, the committee desire to state that their labors would have been very considerably lightened if the essays in question had been accompanied by full lines of specimens.

CHAS. BULLOCK.
W. H. PILE, } *Committee.*
JOHN M. MAISCH,

"PHILADELPHIA, March 9th, 1875."

THE CHICAGO COLLEGE OF PHARMACY—ABSTRACT FROM THE MINUTES OF THE ANNUAL MEETING.

The annual meeting of the Chicago College of Pharmacy was held in the lecture room of the College, 77 Dearborn street, on Wednesday afternoon, March 3. After calling the roll, the minutes of the preceding meetings of the College and Board of Trustees were read by the Secretary, and on motion approved.

The first business of importance was the consideration of an amendment to the by-laws, reducing the annual dues of active members to five dollars.

The reports of the Secretary and Treasurer were read, showing the College to be in a good financial condition. These reports having received the endorsement of the Finance Committee, were accepted and ordered to be filed. The various standing committees reported through their respective chairmen.

At the request of the Committee on Rooms and Library, a committee of three was appointed to confer with a like committee of the Alumni Association, to devise ways and means of placing the library of the College in a condition of greater usefulness, by duplicating certain volumes and allowing the duplicates to be taken out, under certain restrictions, by the members of the Alumni Association and the College.

The report of the Dean of the Faculty was read, giving an account of the course of lectures in the School of Pharmacy just closed.

The retiring President, Mr. T. H. Patterson, delivered a very able and instructive address, which was warmly received by the meeting, the recommendations of which were referred to a special committee, to consider and report to the Board of Trustees.

On proceeding to the election of officers for the ensuing year, Messrs. J. H. Wilson and L. C. Hogan were appointed tellers, and the election proceeded by ballot, with the following result:

President—J. W. Mill.
Vice-Presidents—C. Gilbert Wheeler and J. H. Wilson.
Secretary—J. J. Siddall.
Treasurer—T. N. Jamieson.
Corresponding Secretary—Henry Biroth.

Trustees—T. H. Patterson, M. E. Huyck, M. W. Borland, Albert E. Ebert, Thomas Whitfield, E. H. Sargent, William F. Blocki, L. C. Hogan, N. Gray Bartlett, George Buck.

At the regular March meeting of the Trustees of the Chicago College of Pharmacy, on Wednesday, March 10th, the Board organized by electing the President of the College, Mr. J. W. Mill, presiding officer for the ensuing year.

On motion, Mr. George Parry was unanimously elected a member of the College.

The following standing committees were appointed for the ensuing year:

On Rooms and Library—J. J. Siddall, C. G. Wheeler, George Buck.
On Cabinet and Apparatus—N. G. Bartlett, L. C. Hogan, J. C. Borcherdt.
On Finance—J. H. Wilson, F. M. Goodman, W. F. Blocki.
On Examination—T. H. Patterson, George Buck, J. J. Siddall.
On Progress of Pharmacy—A. E. Ebert, E. H. Sargent, J. W. Mill.
On Business—Thos. Whitfield, J. J. Siddall, Geo. H. Ackerman.
On Deceased Members—M. E. Huyck, Henry Biroth, C. W. Grassley.
On Lecturers—E. H. Sargent, C. G. Wheeler, J. J. Siddall.

The Faculty and committee appointed to conduct the examination of students reported the following as having passed the required examination, and recommended them to the Board of Trustees for the Diploma of the College:

Fletcher S. Smith, Chas. William Jacob, Hugo W. C. Martin, Chas. Krusemarck, Andrew Scherer, William F. Woodson, Robert H. Cowdrey.

On motion, the report and recommendation of the committee were adopted, and the title of Graduate in Pharmacy conferred.

ALUMNI ASSOCIATION OF THE CHICAGO COLLEGE OF PHARMACY.

The first stated meeting of the A. A. C. C. P. was held at the College rooms on March 14, 1875, F. M. Goodman presiding. On account of the absence of the Secretary, A. G. Vogeler was appointed Secretary *pro tem.*

The President appointed a committee of three—C. M. Ford, George H. Ackerman and A. G. Vogeler—to deliberate with a similar committee from the College of Pharmacy in regard to making the College library circulating. A paper was then read by A. G. Vogeler, entitled "Nomenclature and Labels," advocating the adoption of the continental pronunciation of Latin names, and also urging greater accuracy on the part of pharmacists as to printed labels. The next two essays were by the President. One treated on Soap Liniment, giving a formula for a preparation that would not congeal below 36° F., while the second was a lengthy and very interesting review of the history of glycerin. After these papers had been referred for publication, the meeting adjourned.

ADOLF G. VOGELER, *Secretary pro tem.*

LOUISVILLE COLLEGE OF PHARMACY.

The fifth annual meeting of the Louisville College of Pharmacy was held in the College hall, corner Second and Jefferson streets, yesterday, for the purpose of electing directors and officers, and celebrating graduation exercises.

The following Board of Directors was elected to serve the ensuing year: C. Lewis Diehl, Vincent Davis, Wm. G. Schmidt, S. Fisher Dawes, Bernh. Bueckle, J. M. Krim, Emil Scheffer, Fred. C. Miller, John Colgan, Ferd. J. Pfingst, Wiley Rogers, J. A. McAfee.

At a meeting of the Board of Directors of the Louisville College of Pharmacy, held immediately after the adjournment of the annual meeting of the College, the following officers were elected to serve the ensuing year:

President—C. Lewis Diehl.
First Vice-President—Emil Scheffer.
Second Vice-President—Vincent Davis.
Recording Secretary—Fred. C. Miller.
Corresponding Secretary—Wm. G. Schmidt.
Treasurer—S. Fisher Dawes.
Curator—James A. McAfee.

The following young gentlemen, having been recommended by the Faculty and committee, had the degree of Graduate in Pharmacy conferred upon them: Bernh. Bueckle, Albert J. Schoettlin, Emil Scheffer, J., and Oscar Beckman.

The graduating class was addressed by Prof. L. D. Kastenbine, who delivered an entertaining and instructive lecture on the origin, rise and progress of chemistry.

WM. G. SCHMIDT,
Corresponding Secretary Louisville College of Pharmacy.

ALUMNI ASSOCIATION OF THE LOUISVILLE COLLEGE OF PHARMACY.

The graduates of the Louisville College of Pharmacy have organized an alumni association, Dec. 17, 1874, and have named it "The Alumni Association of the Louisville College of Pharmacy."

The following officers were elected for the ensuing year:

President—Jno. F. Rudell.
First Vice-President—Henry Preissler.
Second Vice-President—E. D. Caldwell.
Recording Secretary—Henry N. Voigt.
Corresponding Secretary—Chas. P. Frick.
Treasurer—Wm. Tafel.

Board of Directors—Chas. O. Frick, Jno. C. Loomis, Ed. E. Anderson, Phil. G. Bentel, Chas. De Kress.

Chas. P. Frick, *Cor. Sec'y A. A. L. C. P.*

EDITORIAL.

The eighth annual commencement of the Chicago College of Pharmacy was held in the First Methodist Church, corner Clark and Washington streets, on Thursday evening, March 18. This place was also selected last year, for the reason of its more central location and convenience of access. Notwithstanding the very stormy weather which prevailed on that evening, a very good audience greeted the boys, who were naturally in the best of humor. The exercises were both pleasant and profitable, music being interspersed in the programme, amongst the literary productions.

President Mill's remarks in awarding the diplomas were very interesting and pointed, being received with hearty applause. The address to the graduates, by Prof. Bartlett was an exceedingly able and interesting discourse, and highly appreciated by all. The response in behalf of the class, by Mr. Martin, was very appropriate, and was supplemented by the presentation to the College of a handsomely framed photograph group of the class.

The Revised Stamp Tax on Medicines.—"Sec. 22. That hereafter nothing contained in the Internal Revenue Laws shall be construed so as to authorize the imposition of any stamp-tax upon any medicinal articles prepared by any manufacturing chemist, pharmaceutist or druggist, in accordance with a formula published in any standard dispensatory or pharmacopœia in common use by physicians and apothecaries, or in any pharmaceutical journal issued by any incorporated college of pharmacy, when such formula and where found shall be distinctly referred to on the printed label attached to such article, and no proprietary interest therein is claimed. Neither shall any stamp be required when the formula of any medicinal preparation shall be printed on the label attached to such article, where no proprietorship in such preparation shall be claimed."

The workings of the new postal law occasions great hardships to publishers who are unfortunate enough to have an extensive circulation in their own city. For instance, each copy of the Pharmacist mailed to subscribers in Chicago is required to be prepaid with a two cent stamp. Formerly it cost the subscriber one cent per month for postage. Now it costs the Pharmacist double that amount. It will perhaps surprise some of our intelligent representatives in Congress to find that it costs the same to send a publication by mail a few blocks in the city as it does to England.

Aaron P. Shallcross died at Denver, Col., March 10, 1875. Mr. Shallcross was a native of Ohio. In 1861 he went to Philadelphia to attend the lectures of the College of Pharmacy, and while thus engaged was in the employ of the late Edward Parrish. In 1863 he went to Denver, and shortly became one of the leading pharmacists of this growing city. The deceased was thirty-five years old, and leaves a wife and two children.

THE PHARMACIST.

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CHEMICAL EXAMINATION OF A NOSTRUM CALLED CINCHO-QUININE.

BY EMIL SCHEFFER AND C. LEWIS DIEHL.

The relation of the pharmacist to the physician is of such a character that the pharmacist is frequently called upon to act as the adviser to the physician in framing formulas and in determining the precise conditions in which medicines may be prescribed to the best advantage of the sick. So long as such influence is exercised solely for the benefit and in the interest of the patient, the influence so exercised is proper and honorable, even if the pharmacist is thereby directly and materially the gainer; but if the pharmacist abuses his privilege and prostitutes the professional influence he may command for the primary motive of gain, he is deserving of the severest opprobrium, and ranks beneath the most impotent quack. Such being our opinion of a class of "specialists who offer gold and furnish gilded dross," we have considered it our duty to combat the specialty innovation, in so far as it is based upon secrecy of formula, and whenever unduly placed before the medical profession.

Several years ago, a preparation called "Cincho-Quinine" was thrown upon the market by Jas. R. Nichols & Co.—now Billings, Clapp & Co.—of Boston, Mass. The manner in which the attention of medical practitioners was drawn to the nostrum is too familiar to the pharmacist to require detailed mention here. Suffice it to say, that by diligent and profuse advertisement, by the representation of the manufacturers that it was an accurate alkaloidal representative of cinchona bark, by its apparent cheapness as compared to sulphate of quinia, and, undoubtedly also, by a certain medicinal value, the article has gained favor with many physicians, and is, in some localities, frequently prescribed as a substitute for sulphate of quinia. Among pharmacists, however, and especially among those who were educated to a professional standard, the nostrum was regarded with suspicion, and very shortly after its introduction it was subjected to chemical examination. We are cognizant only of two such examinations; one, made in 1870 by Mr. Wm. T. Wentzel; the other, read by Mr. Albert E. Ebert before the American Pharmaceutical Association at its meeting in 1874, from which appears that neither of the experimenters succeeded in determining the presence of quinia. The reading of Mr. Ebert's paper before the American Pharmaceutical Association prompted the manufacturers of the nostrum to protest against its publication in the proceedings of that body, unless such publication was complemented by certain explanations, and the certificates of several chemists (employed by the manufacturers), that the article contained quinia. The American Pharmaceutical Association having thus become involved in a controversy, the merits of which remained undecided, we, being connected with the Association, and having become interested in the question, have endeavored by the experiments detailed in the following pages to place the substance called "Cincho-Quinine" before the public on its true merits.

We used for our experiments four samples of cincho-quinine, which are severally designated in our paper as No. 1, No. 2, No. 3 and No. 4.

Sample No. 1 was purchased by E. Scheffer in March, 1874, and consisted of part of a bottle at the date of our examination.

Sample No. 2 was purchased for our examinations. It had been obtained from the maufacturer by the wholesale drug house from which we bought it, some time in May, 1874. The sealed bottle was enveloped in a circular, covered with a blue wrapper, and was labeled. The circular will be described in an appendix, as *Circular No.* 1.

Sample No. 3 was purchased by C. Lewis Diehl on the 18th of September, 1874, and consisted of part of a bottle at the date of our examination.

Sample No. 4 was also purchased for our examinations. It had been obtained from the manufacturer by the wholesale drug house from which we bought it, early in December, 1874. The sealed bottle was enveloped in a circular, covered with a blue wrapper, and was labeled. The circular will be described in the appendix, as *Circular No.* 2.

SERIES OF EXPERIMENTS, I.

The physical appearance of cincho-quinine, as well as the statement of its manufacturers, "that it is composed wholly of the bark alkaloids," rendered it obvious to us that it was obtained by precipitation from saline combination by means of an alkaline base. If, as the manufacturers claim, the article in question is composed *wholly* of the cinchona alkaloids, the task of determining the nature of the acid which had held the alkaloids in saline combination, and of the alkali with which it had been precipitated from solution, would have been a hopeless one. In other words, cincho-quinine, being *wholly* composed of "quinia, quinidia, cinchonia, cinchonidia, and certain not well determined alkaloidal principles of bark," it cannot contain sulphuric, nitric, hydrochloric or other acid; nor soda, potassa, or ammonia, either free or in saline combination. We preferred, however, to accept the evidence of our chemical experiments rather than the assertion of the manufacturers, and propose in the following to give the results of our

QUALITATIVE EXAMINATION OF CINCHO-QUININE,

for which we used the sample described as: *Sample No.* 1.

This sample possessed slight alkaline reaction; a portion, brought in contact with the moist red litmus, restoring the red color to blue.

It readily dissolved in water, acidulated with hydrochloric acid, forming, practically, a clear solution. The solution, so obtained, produced with solution of chloride of barium a copious precipitate, which was insoluble in hot nitric acid.

Qualitative result No. 1.—*Cincho-quinine contains sulphuric acid in relatively large quantities.*

A second portion of cincho-quinine was digested with water for 24 hours, and the solution filtered from the undissolved portion. The solution was evaporated to dryness, and incinerated in a platinum capsule, during which process the considerable residue melted, became charred, and was, finally, entirely dissipated.

Qualitative result No. 2.—*Cincho-quinine does not contain a non-volatile base or compound.*

A third portion was treated with boiling strong alcohol, the solution filtered, and the small residue thoroughly washed with hot alcohol. The residue=*A*. The filtrate=*B*.

A.—The residue was readily soluble in water, and was neutral to test paper. Its solution was not precipitated by ammonia, but gave an abundant precipitate with chloride of barium, which was not redissolved by hot nitric acid. When a portion of the solution was heated in a test tube with solution of potassa, the vapor evolved restored the blue color to moist red litmus paper, and produced copious fumes when a glass rod, moistened with hydrochloric acid, was subjected to its influence. Upon evaporating a portion of the solution, a crystalline residue was obtained, which, heated strongly in a platinum capsule, was completely volatilized.

Qualitative result No. 3.—*Cincho-quinine contains sulphate of ammonium.*

B.—The hot alcoholic solution deposited on cooling an abundance of crystals, which were collected on a filter. The crystals=*B* 2. The filtrate=*B* 1.

B 1.—A portion of the cold filtrate was diluted with water, acidulated with hydrochloric acid, and treated with chloride of barium, which formed an abundant precipitate of sulphate of barium. The remainder of the solution was evaporated to dryness with gentle heat. During the evaporotion a white, apparently crystalline ring was formed on the sides of the capsule and near the original level of the solution. As the evaporation proceeded a second resinous ring formed further down the sides of the capsule. Finally, when the evaporation was completed, a crystalline deposit formed in the centre of the capsule. Portions of each of the ring deposits were tested with chlorine water and ammonia, but gave no indication of either quinia or quinidia. The entire residue was then dissolved in acidulated water, the solution precipitated with ammonia, then shaken with ether, and the ethereal solution evaporated. The small residue so obtained was dissolved in dilute acid, and gave, when treated with chlorine water and ammonia, a green color; with chlorine water, ferrocyanide of potassium and ammonia, a red color.

Qualitative result No. 4.—*Cincho-quinine contains either quinia, or quinidia, or both.*

B 2.—The crystals, deposited on the cooling of the hot alcoholic solution (*B*), were digested with water, transferred to a filter, and washed with water several times. The solution=*a*. The residual crystals=*b*.

a. The solution was found to contain sulphuric acid in abundance. It afforded a copious precipitate on the addition of ammonia. No color reaction was produced by either chlorine water and ammonia, or chlorine water, ferrocyanide of potassium and ammonia.

Qualitative result No. 5.—*Cincho-quinine cantains sulphate of cinchonia.*

b. The crystals, which remained undissolved by digestion with water (*B* 2), were readily dissolved by dilute hydrochloric acid. The *absence* of sulphuric acid was proved by the usual test. The absence of quinia or quinidia was also proved in the same manner as in experiment *a*.

Qualitative result No. 6.—*Cincho-quinine contains cinchonia in its alkaloidal condition.*

A fourth and weighed portion of cincho-quinine was dissolved in dilute sulphuric acid, precipitated with ammonia, digested with ether, and the ethereal solution evaporated and weighed; our aim being to ascertain the proportion of, in ether, soluble alkaloids, which amounted to 4·75 per cent. of the cincho-quinine employed. We wish it to be understood however, that this experiment was not conducted with the degree of care required for a *quantitative* experiment, the result as obtained being sufficiently accurate for a qualitative experiment, as was intended.

Qualitative result No. 7.—*Cincho-quinine contains but a small relative proportion of, in ether, soluble alkaloids.*

The ethereal residue, as above obtained, was found to contain either quinia or quinidia, or both. We dissolved a portion in dilute alcohol, containing five per cent. sulphuric acid, added tincture of iodine, and redissolved the bulky brown precipitate produced, by the aid of gentle heat. After standing twenty-four hours, the deposit which had formed was examined, and was found to consist mainly of brown iodo-sulphate of quinidia, interspersed with the characteristic green-black crystals of herapathit (iodo-sulphate of quinia).

Qualitative result No. 8.—*Cincho-quinine contains both quinia and quinidia, but the relative proportion of quinia to quinidia is very small.*

By these qualitative experiments we have proven:

1. That cincho-quinine contains sulphuric acid.
2. That this sulphuric acid is partly represented by sulphate of ammonium.
3. That the greater part of the sulphuric acid is represented by alkaloidal sulphate.
4. That cincho-quinine contains but a small percentage of quinia, either as alkaloid or as sulphate.
5. That the entire quantity of, in ether, soluble alkaloids contained in cincho-quinine does not exceed five per cent., and that the bulk of the, in ether, soluble alkaloids is composed of quinidia (present in the cincho-quinine, either as alkaloid or sulphate).
6. That cincho-quinine is mainly composed of cinchonia, partly as alkaloid and partly as sulphate.
7. That, therefore, cincho-quinine is not a fair nor accurate alkaloidal representative of cinchona bark.

With these results we might, under ordinary circumstances, have been satisfied as to the true nature of the nostrum. But we had set out to determine quantitatively the amount of quinia contained in it, and, therefore, only considered ourselves well prepared to make intelligently a quantitative analysis.

SERIES OF EXPERIMENTS, II.

We now propose, in the following, to give the results of our

QUANTITATIVE ANALYSIS;

but, in order to state the results as concisely as possible, we deem it proper to make the following preliminary observations:

1. *The precipitates* were all obtained with as small a quantity of precipitant as was necessary to complete precipitation, and these (precipitates) were washed with as little of the washing liquid as was necessary to completely remove soluble contaminants.
2. *The drying of precipitates and residues* was conducted in a water-bath, at a temperature of 180° to 200° F., as long as they lost weight—generally for three days, and sometimes for a week; the filters containing precipitates being inclosed in tared and covered porcelain crucibles.
3. *The filtering paper* used was the best Swedish, and the tare of the filters, as well as that of the vessels in which weighings were made, was ascertained after subjecting them to heating on the water-bath as long as they lost weight.
4. *The weighings* were made on an analytical balance, which responded to the one-tenth part of a milligram.
5. *The reagents* were all tested for their purity before we used them, and the stronger ether was that manufactured by Dr. E. R. Squibb.
6. *The cincho-quinine* used in this series of experiments was that described as *Sample No.* 2.

EXPERIMENT A.

A 1.—4·118 grams of cincho-quinine was dried; when dried, it weighed 4·066 grams; it had, therefore, lost 0·052 grams = 1·262 per cent.

Quantitative result No. 1.—*Cincho-quinine, when dried completely, at a temperature of* 180° *to* 200° *F., lost* 1·262 *per cent.*

A 2.—5·0 grams of cincho-quinine was dissolved in water acidulated with hydrochloric acid, the solution was precipitated with ammonia, the precipitate collected on a filter, washed, dried and weighed. It weighed 4·559 grams, and had, therefore, lost 0·441 grams=8·82 per cent. (*See results A* 4.)

Quantitative result No. 2.—*Amount of substances foreign to an alkaloidal condition of cincho-quinine,* 8·820 *per cent.*

A 3.—The filtrates and washings from *A* 2 were mixed, evaporated to a small volume, acidulated with hydrochloric acid, and chloride of barium added, in slight excess. The precipitate which had formed was collected on a filter, washed, dried and weighed. The so obtained sulphate of barium weighed 0·697 grams, corresponding to 0·240 grams of sulphuric acid=4.8 per cent., SO_3.

Quantitative result No. 3.—*Cincho-quinine contains of sulphuric acid* 4·800 *per cent.*

A 4.—The filtrate and washings from *A* 3 were concentrated to a small bulk, sulphuric acid added in slight excess, to remove the excess of barium used as chloride, the sulphate of barium was filtered off, and to the clear filtrate ammonia was added in slight excess. No precipitate of alkaloids was formed after standing for more than a week.

Result No. 4.—*The washings from the precipitated alkaloids, A* 2, *did not hold alkaloids in solution.*

Remarks.—By these experiments, *A*, we have shown that the sample of cincho-quinine (No. 2) contained 8·820 per cent. of constituents which are foreign to its alkaloidal condition. Of this quantity, sulphuric acid constitutes a portion equal to 4·80 per cent. of the cincho-quinine, and water, driven off by the heat of the water-bath, 1·262 per cent., leaving 2·758 per cent. to be accounted for. Our qualitative experiments have shown the presence of a small quantity of ammonia as sulphate, and of a considerable quantity of sulphate of the alkaloids; and, further on, we propose to show the exact quantities of these sulphates obtainable by a given quantity of water from each of the four samples of cincho-quinine examined. We have also found that the filtrates and washings from the precipitated alkaloids did not contain any alkaloids in solution (*A* 4), and, therefore, unhesitatingly account for the 2·758 per cent. of foreign matter as ammonia and water of crystallization in the alkaloidal sulphates.

RECAPITULATION OF RESULTS A.

		PER CENT.
1.	Amount of sulphuric acid in cincho-quinine	4·800
2.	" moisture expelled by heating to 180°–200° F.	1.262
3.	" ammonia	2·758
4.	" water of crystallization in alkaloidal sulphate	
	Total constituents foreign to an alkaloidal condition of cincho-quinine	8·820

EXPERIMENTS B.

B 1.—The precipitate *A* 2 was triturated to a fine powder, and 4·513 grams of it introduced into a flask and agitated with stronger ether frequently during twenty-four hours. The contents of the flask were then transferred to a filter, the filtrate was collected in a tared beaker, and the residue on the filter washed with ether until about four fluid ounces of filtrate and washings were obtained. These were allowed to evaporate, spontaneously, at first, and then on a water bath, until the residue no longer lost weight. It weighed 0·254 grams, which, calculated for the entire quantity of precipitates, *A* 2 (4·559 grams), corresponds to 0·2565 grams of, in ether, soluble alkaloids, from 5·0 grams of cincho-quinine, 5·130 per cent.

Quantitative result No. 5.—*Cincho-quinine, Sample No.* 1, *contains of, in ether, soluble alkaloids,* 5.130 *per cent.*

Remarks.—The ethereal solution, *B* 1, during the spontaneous evaporation, deposited crystals on the sides of the beaker until about two-thirds had evaporated; after which there was no longer any crystalline formation, or deposit, until it was evaporated to complete dryness, when the bottom of the beaker was covered with a yellowish-white resino-crystalline residue.

We attempted to redissolve the entire residue with twenty-five parts of stronger ether, but found it very slowly, and with difficulty, soluble in that solvent, and, consequently, abandoned the experiment. Had this residue consisted of quinia only, it would have readily dissolved in from twelve to fifteen parts of stronger ether.

B 2.—The ethereal residue, *B* 1, was dissolved in 100 drops of alcohol of sixty per cent., containing five per cent. of sulphuric acid; tincture of iodine was added in slight excess, and the liquid heated gently, to redissolve the very copious red-brown precipitate which had been formed. The solution was then set aside for forty hours, when a mixture of *herapathit* and of a red-brown crystalline precipitate had formed. This mixture was collected on a filter, washed with dilute alcohol, and dried. It weighed 0·067 grams. The filtrate and washings, on spontaneous evaporation, deposited a very small additional quantity of herapathit. This was carefully collected, and, together with the previously obtained and weighed precipitate, dissolved in boiling alcohol, the solution filtered, allowed to evaporate at a gentle heat to a small volume, and allowed to stand at rest for eighteen to twenty-four hours. Well defined crystals of herapathit, exhibiting the characteristic bronze-green color, had formed. These were collected on a filter, washed with a little dilute alcohol, dried and weighed. The so purified herapathit weighed 0·0540 grams, corresponding to 0·0305 grams of pure quinia from 4·513 grams of the precipitated alkaloids (*A* 2), which, calculated for the entire precipitate (*A* 2) obtained, is 0·0307 grams, or 0·612 per cent. of the 5·0 grams of cincho-quinine used.

Quantitative result No. 6.—*Cincho-quinine, Sample No.* 2, *contains of pure quinia* 0·612 *per cent.*

B 3.—The filtrate and washings—*B* 2—from which both the impure and pure herapathit had been obtained, were mixed, decolorized with alcoholic solution of sulphurous acid, and evaporated to dryness. The residue was dissolved in dilute hydrochloric acid, precipitated by ammonia, the precipitate washed and dried. This precipitate was subjected to the following qualitative examination:

A portion was dissolved in dilute sulphuric acid, a little acetic acid was added, and then tincture of iodine. The brick-red deposit formed was redissolved by the aid of gentle heat, and the mitxure was then allowed to stand over night. Next morning a brick-red crystalline deposit had formed, which was entirely free from the green-black crystals of herapathit.

The remainder was dissolved in dilute hydrochloric acid, and the solution was treated with chlorine water and ammonia, which produced a green color, and with chlorine water, ferrocyanide of potassium and ammonia, which produced a red color. But in neither instance was the color as intense as when corresponding quantities of sulphate quinia or of sulphate of quinidia were subjected to the same tests. This difference we ascribe to the presence of cinchonia, and, possibly, also to cinchonidia, the ether dissolving portions of both of these alkaloids, if present. We therefore unhesitatingly arrive at the following conclusions:

Result No. 7.—*The, in ether, soluble portion of cincho-quinine is composed,*

1, *of a small proportion of quinia;*
2, *of a large proportion of quinidia;*
3, *of a small proportion of cinchonia;*
4, (*probably*) *of a small proportion of cinchonidia.*

REMARKS.—We wish it to be positively understood that we intend to convey, by what we have said in the above relating to *Experiments B*, that we have determined *quantitatively* only the, in ether, soluble alkaloids in cincho-quinine (Sample No. 2), and the quinia therein contained.

EXPERIMENTS C.

C 1.—A portion of the residue remaining from the precipitate *A* 2 after its exhaustion with stronger ether, as detailed in Experiment *B* 1, was dissolved in water acidulated with hydrochloric acid, precipitated with ammonia, and the mixture was then shaken with stronger ether. The ethereal solution yielded on evaporation a small residue, which, when dissolved in dilute hydrochloric acid, and treated with chlorine water and ammonia, gave no color-reaction whatever.

Result No. 8.—*The precipitate A* 2, *after exhaustion with stronger ether, as detailed in B* 1, *no longer contained either quinia or quinidia.*

C 2.—0·640 grams of the same residue was dissolved in dilute sulphuric acid, the solution was carefully neutralized with potassa, and a carefully neutralized solution of tartrate of potassium and sodium was added (in the proportion of 0·522 parts to 1·000 parts of alkaloid residue). The mixture was then evaporated to 40 times the weight of the alkaloid residue employed, and allowed to stand for four days. No crystalline (or other) deposit had formed.

Result No. 9.—*The residue remaining after the exhaustion of the precipitate A* 2 *with ether contains no cinchonidia, and is therefore composed of cinchonia only.*

REMARKS.—The method adopted by us for the separation of cinchonidia from cinchonia is that recommended by De Vrij (*vide* "Jahresbericht der Pharmacie," 1873). The fact, that we have failed to obtain cinchonidia in the residue of the precipitate *A* 2 after its exhaustion with ether, does not decide its absence in cincho-quinine, as it may have been taken up by the ether, and would then be contained in the ethereal residue *B* 1. In that event, however, it can only be present in very small proportion.

SERIES OF EXPERIMENTS, III.

These experiments were made with the four samples of cincho-quinine, described in the begining of our paper, and were both qualitative and quantitative. The large quantity of sulphuric acid found in sample No. 2 made it evident to us that this acid existed mainly in alkaloidal combination. If, therefore, any considerable portion of cinchonia was held in such combination, the sulphate of cinchonia, being soluble in about 50 parts of cold water, would readily be taken up by digesting cincho-quinine in cold water, and its presence as such proved. We also wished to determine the amounts of, in ether, soluble alkaloids contained in samples No. 1, No. 3 and No. 4, and to determine the amount of quinia in one or more of these samples.

EXPERIMENTS D.

D 1.—2·0 grams of each of the samples of cincho-quinine, No. 1, No. 2, No. 3 and No. 4, were tested as follows: The sample was triturated to a fine powder, and agitated in a flask, occasionally, for 24 hours with 60 grams of water; the contents of the flask were then poured on a filter, and the residue on the filter washed with sufficient water to make the weight of the filtrate up to 60 grams. The filtrate was evaporated in a tared capsule and heated until it no longer lost weight, at a temperature of about 180°F. The following table shows our results:

2. GRAMS CINCHO-QUININE.	WEIGHT OF RESIDUE FROM AQEUOUS SOLUTION.	PERCENTAGE.
Sample No. 1.	0·255 grams.	12·75 per cent.
Sample No. 2.	0·235 grams.	11·75 per cent.
Sample No. 3.	0·350 grams.	17·70 per cent.
Sample No. 4.	0·440 grams.	22·00 per cent.

These residues consisted mainly of short, prismatic crystals, and were perfectly white. We subjected the residue from sample No. 4 to the following qualitative examination:

D 2.—The residue (from sample No. 4) was digested with 30 grams of cold water for 24 hours, and the solution was then filtered from the undissolved portion. The solution=*a*. The undissolved portion=*b*.

a. The solution (*a*) was found to contain sulphuric acid, by the usual test. Upon the addition of ammonia, an abundant alkaloidal precipitate was produced. The addition of chlorine water, followed by ammonia, gave no color reaction.

Result of a.—The cold aqueous solution *a*, is composed of sulphate of cinchonia (and, perhaps, sulphate of cinchonidia).

b. The undissolved portion *b*, was dissolved in a little water by the aid of hydrochloric acid. The solution gave abundant evidence of sulphuric acid and of alkaloid, by the tests heretofore used. It gave a faint green color with chlorine water and ammonia, and a faint red color, with chlorine water, ferrocyanide of potassium and ammonia.

Result of b.—Traces of quinia, or quinidia, or both, are contained in the residue *b*.

RECAPITULATION OF RESULTS D.

The various samples of cincho-quinine examined by us, yield a considerable percentage to cold water. The solutions yield upon evaporation white, crystalline residues, which, as proven by experiment D 2, upon the residue from sample No. 4, (which had yielded to water 22 per cent. of its components), are composed mainly of sulphate of cinchonia, and contains only traces of quinia or quinidia, or both, probably as sulphates.

EXPERIMENTS E.

E 1.—2·0 grams each of samples No. 1, No. 3 and No. 4, were severally dissolved in acidulated water, the solution precipitated by ammonia, the precipitates collected, washed, dried, and shaken, occasionally for 24 hours, with 1¼ fluidounces of strong ether; the filters, carefully torn into shreds, being introduced into the flasks, along with the finely powdered precipitates. The contents of the flasks were finally thrown on a filter, and the residue in the filters washed with sufficient stronger ether to make each filtrate measure 1½ fluidounces. These filtrates were evaporated in tared beakers, first spontaneously, and afterwards, until completely dry, on a water bath. The following table, in which we include the result obtained with the sample No. 2, as detailed in our experiment *B* 1, will show the results of our experiment *E* 1:

CINCHO-QUINIŅE.	QUANTITY USED.	AMOUNT OF RESIDUE. FROM ETHEREAL SOLUTION.	PERCENTAGE.
Sample No. 1.	2 grams.	0·098 grams.	4·90 per cent.
Sample No. 2.	5 grams.	0·256 grams.	5·13 per cent.
Sample No. 3.	2 grams.	0·081 grams.	4·05 per cent.
Sample No. 4.	2 grams.	0·100 grams.	5·00 per cent.

In the ethereal residues of samples of No. 1 and No. 4, we concluded to determine the quinia by a method, which is based on the relative solubilty of the alkaloids, quinia and quinidia, in water, and which seemed to us to lead to the most satisfactory results. If we digest a mixture of quinia and quinidia on a water bath with water, and allow the mixture to cool, the solution formed will be saturated for both alkaloids, if both have been used in excess. If, however, one of the alkaloids is present in smaller quantity than the water is capable of holding in solution, such quantity, if unknown, may be ascertained by evaporating the aqueous solution to dryness, weighing the product obtained, and deducting from this product the amount of that alkaloid which was held in saturated solution.

For example: We have a substance, *A*, which requires 100 parts of water for complete solution, and we have a substance, *B*, which requires 10 parts of water for complete solution. We have a mixture of these two substances, and wish to ascertain the proportions of admixture. We apply the solvent test as follows: We take, say 10 parts of the mixture, digest it with 100 parts of water, filter the solution, and evaporate it. We obtain 5 parts of product. Had the substance consisted of *A* alone, we should have obtained but 1 part of product; had it contained of *B* alone, or contained but one-tenth of its weight of *A*, the entire substance would have been dissolved, and we would have obtained 10 parts of product. But we have obtained 5 parts, and consequently have obtained a saturated solution of substance *A*, containing all of the substance *B* that had been contained in the 10 parts of mixture. The product was consequently composed of one part of the substance *A* and 4 parts of the substance *B*; and the mixture tested was composed of 5 parts of *A* and 4 parts of *B*.

We have been thus explicit in order that our method of determining the quinia in the ethereal residue of No. 1 and No. 4 may be clearly understood; and it only remains now to give some consideration to the relative solubility of the two alkaloids in cold water:

1. *Quinia* is soluble in 364 parts of cold water, *Duflos vide*, "Gmelin's Handbuch der Chemie," vol. 7, part 2, page 1697; in 480 parts, *Abl, Ibid*; in 400 parts, *vide*, "U. S. Dispensatory," 13th Ed., p. 297; in about 400 parts *vide*, "Pereira's Materia Medica," abridged Ed., 1872; in 350 parts, *vide*, "Gottlieb's Chemie," Ed., 1869, vol. 2, p. 443.

2. *Quinidia* is soluble in 1500 parts of cold water, *Van Heiningen, De Vrij*, *vide*, "Gmelin's Handbuch der Chemie," vol. 7, part 2, p. 1720; in 2580 parts, *Leers*, *vide*, "U. S. Dispensatory" and "Pereira's Materia Medica;" in 2000 parts, *O. Hesse*, *vide*, "Jahresbericht der Pharmacie," 1868, p. 294; in 1500 parts, *vide*, "Gottlieb's Chemie," Ed., 1869, vol. 2, p. 449.

O. Hesse, who has proposed that quinidia be called *cinchonia*, states, in "Jahresbericht der Pharmacie," 1873, p. 94, that the quinidia of *Leers* is realy *cinchonidia*. Dr. Wood, in the "United States Dispensatory," remarks that quinidia must always vary in its solubility, according to the amount of cinchonidia it contains. We have therefore paid no regard to the authority giving its solubility in 2580 parts of water, and have adopted as the standard for our experiments the authority of *Van Heiningen* and *De Vrij*, giving the solubility of quinidia in 1500 parts of water, at ordinary temperature. For quinia we have adopted the authority of the "United States Dispensatory" and "Pereira's Materia Medica," according to which quinia is soluble in 400 parts of water, at ordinary temperature.

E 2.—The ethereal residue from Sample No. 1 was digested, in the beaker from which it had been evaporated, with 70 grams of water, on the water-bath, for twelve hours, the weight being kept up to 70 grams, as near as possible, by the occasional addition of water. The beaker was then removed from the water-bath, the original weight carefully adjusted, and was allowed to cool and to stand over night. The cold saturated solution was filtered, evaporated to complete dryness, and the residue weighed. It weighed 0·0600 grams.

1500 grams of water dissolving 1·0 grams of quinidia, 70 grams of water will dissolve 0·0466 grams of quinidia, which, deducted from 0·0600 grams, leaves 0·0134 grams, the amount of quinia contained in the ethereal residue, or 0·670 per cent. of the cincho-quinine, Sample No. 1.

E 3.—The ethereal residue from Sample No. 4 was treated with 40 grams of water, precisely as that of Sample No. 1 had been treated with 70 grams, with the following result:

The residue weighed 0.0370 grams; 40 grams of water had dissolved 0·0266 grams of quinidia, which, deducted from the gross residue, leave 0·0104 grams of quinia, or 0.52 per cent. of the cincho-quinine, Sample No. 4.

E 4.—It remains now only to prove the presence of quinidia in the aqueous extractions of the ethereal residues. We accordingly dissolved these residues in small quantities of acidulated water, and applied to them the following tests:

1. Chlorine water, followed by ammonia, produced a decided green precipitate, which, according to *Herapath* (*Vide* "Gmelin's Handbuch der Chemie," vol. 7, part 2, p. 1720), is distinctive of quinidia from quinia in concentrated solutions.

2. Chlorine water, followed by ferrocyanide of potassium, and then ammonia, produced a dirty brownish-red precipitate, which, according to *Schwarzer*, (*vide* "Gmelin's Handbuch der Chemie," vol. 7, part 2, p. 1720,) is distinctive of quinidia from quinia in concentrated solutions.

3. The addition of tincture of iodine to their solution in dilute alcohol containing excess of sulphuric acid, produced an orange-brown precipitate, which, when redissolved by gentle heat and allowed to deposit by gradual cooling, was found to consist mainly of a voluminous orange-brown precipitate, interspersed with a few black crystals of herapathit.

Result E.—By our experiments E, we have proved that there is no very appreciable difference in the quantities of, in ether, soluble alkaloids and of quinia contained in the various samples of cincho-quinine examined.

CONCLUSION.

The results of the three series of experiments—qualitative and quantitative—may be summed up in the following:

1. Cincho-quinine is composed mainly of cinchonia, a considerable portion of which is in combination with sulphuric acid, and is, therefore, sulphate of cinchonia.

2. It contains less than 1 (one) per cent. of the alkaloid quinia, which exists either in alkaloid or as sulphate.

3. It contains less than 5 (five) per cent. of the alkaloid quinidia, which exists either as alkaloid or as sulphate.

4. If it contains any cinchonidia at all, this can be present only in very small quantities; since the residue, remaining after exhausting precipitated cincho-quinine with ether, did not contain it, and it could, therefore, have been contained only in the ethereal extraction, in which we did not search for it.

5. It contains traces of sulphate of ammonium, and is, therefore, precipitated from combination with sulphuric acid, by ammonia.

6. It is not an alkaloidal representative of cinchona bark.

Finally, we propose, in the following, to correct some statements made in the circular, described in the appendix to this paper, and to correct some impressions that the authors of these circulars evidently intend to convey:

1. In their circular (described as No. 1) the following statement is made:

> "In one hundred ounces of good yellow bark we obtain about two and three-fourths ounces of quinia and two ounces of cinchonia, with variable amounts of the other principles, but less than the two named."

We answer to this, that cincho-quinine is not a representative of such a bark; that, to the contrary, it consists mainly of cinchonia and its sulphate, and that it contains less than 1 (one) per cent. of quinia.

2. In their circular (described as No. 1) the manufacturers state:

> "CINCHO-QUININE holds *all* the important constituents of bark in their alkaloidal conditions. It contains no ***sulphate of cinchonine*** or ***sulphate of quinine***, but ***cinchonine, quinine, quinidine***, etc., without acid combinations. It contains no substances but those found naturally existing in bark."

In their circular (described as No. 2) the phraseology has been changed, but the statement remains the same, as will be seen from the following quotation:

> "CINCHO-QUININE holds all the important constituents of bark in their alkaloidal conditions. It contains no sulphate of cinchonidine, quinidine or quinine, but the pure alkaloids cinchonidine, quinidine, cinchonine, quinine, etc., without acid combinations. It contains no substances but those found naturally existing in bark."

To these statements we answer:

1. Cincho-quinine contains sulphuric acid and sulphate of ammonium, and, consequently, does contain substances not found naturally existing in cinchona bark.

2. Cincho-quinine does contain a portion of alkaloids in acid combination, chief among which is sulphate of cinchonia.

LOUISVILLE, KY., March 15, 1875.

NOTE.—As an appendix, follow the circulars which are found wrapped around each bottle of the nostrum.—EDITOR PHARMACIST.

ASSAY OF QUININE PILLS.

BY L. C. HOGAN.

A short time ago, a physician brought to me a sample of quinine pills, and requested me to examine them. He said he had ordered two-grain pills, and these did not have the desired effect.

I examined them, and found them to contain about sixty per cent. of the amount claimed. I then commenced a general examination of the pills of prominent manufacturers; and I submit the result to the readers of the PHARMACIST, hoping it will be of use to some of them, and set them to examining their pills and other pharmacal preparations. If the advances of *elegant pharmacy* have got to rob us of our profession, make middlemen of us, and load down our shelves with the productions of unscrupulous men, who will sell us cinchonia for quinine, and one-grain quinine pills for two-grain pills, etc., the sooner we stop it the better for us. At least, let us examine these *elegant pharmacals*, and see if we are getting what we pay for.

Five two-grain pills were boiled for a few minutes in three drachms of water, to test their solubility. The quinine was then dissolved in dilute chlorhydric acid, and precipitated with ammonia; precipitate digested with ether; the ethereal solution separated from the aqueous with a pipette, evaporated spontaneously in a tared capsule, the residue carefully dried and weighed.

I prepared for a standard, five two-grain pills, using great care in making, so as not to lose a particle. I obtained in treating them as above, 7.4 grains of quinia, (U. S. D. 1865, page 1322).

The pills examined were taken from full packages, three assays were made of each manufacturer, and Squibb's ether was used each time.

The following table with notes will speak for itself:

	Gross weight of one two-grain pill.	Weight of same pill after coating was removed.	Average quantity of Quinia in five two-grain pills (three assays).	Average quantity of Sulphate of Quinia in five two-grain pills, (three assays.)
Standard		2.3	7.4	10.
A	4.2	2.1	6.85	9.22
B	5.2	2.4	6.65	8.98
C	4.6	2.3	6.6	8.91
D	4.	2.	5.73	8.19
E	4.05	2.5	5.56	7.63
F	3.25	2.5	5.35	7.22
G	3.4	1.8	4.55	6.32
H	4.25	1.8	3.78	5.56

A dissolved readily in three drachms of boiling water. Solution clear, crystals, silky needles, slightly colored, free from cinchonia.

B dissolved readily in three drachms of boiling water. Solution clear, crystals, silky needles, white, free from cinchonia.

C dissolved readily in three drachms of boiling water. Solution clear, crystals, silky needles, white, free from cinchonia.

D dissolved with difficulty in boiling dilute chlorhydric acid. Required a large quantity of ether to dissolve the precipitate. (Quinia loses its solubility by being heated—these were probably overheated in coating). Free from cinchonia.

E dissolved readily in three drachms of boiling water. Solution clear, crystals white, needle and prismatic, showing considerable cinchonia.

F dissolved readily in three drachms of boiling water. Solution clear, crystals, silky needles, white, free from cinchonia.

G dissolved readily in three drachms of boiling water. Solution clear, crystals, silky needles, white, free from cinchonia.

H dissolved readily in three drachms of boiling water. Solution dirty and muddy-looking, crystals, needles badly colored, trace of cinchonia. This quinine was probably *crude.*

It will be seen that there are only three out of the eight which have any claim as two-grain pills.

The best way to remedy this fraud is for all pharmacists to make their own pills, and if they can not sugar-coat them, coat them with gelatine. If this can not be done, assay every bottle of pills before any are used. If they are insoluble, short of quinine, or contain cinchonia, return them to their maker.

EXAMINATION OF QUINIA PILLS.

BY HENRY TRIMBLE.

Having recently met with some spurious quinia pills in the market of this city, I was induced, at the suggestion of some of my friends, to make an examination of several samples from different manufacturers and dealers. The results, as given below, strongly indicate that, in our present questionable practice of allowing the wholesale manufacturer to prepare those articles which should, properly, be made in the laboratory of the individual pharmacist, we must exercise the most scrupulous care to guard against impositions which are sure to be attempted on the profession and the community at large. Seven samples were obtained and examined, six of them being from prominent manufacturers of this city.

The process followed was to dissolve that number of pills which represented five grains of sulphate of quinia in about a fluidrachm of water, acidulated with a few drops of dilute sulphuric acid. From this the quinia was precipitated by water of ammonia, and the whole agitated successively with small quantities of ether, which were removed each time by a pipette to a weighed watch-glass. On evaporation, the quinia was left as a gummy mass, which was dried at a moderate temperature and weighed, so that the amount of crystallized sulphate could be calculated.

Five of the samples examined yielded so near the full amount of quinia claimed for them that there can be no question as to the honesty of their manufacture. The sixth showed an evident deficiency, giving only about 70 per cent. of the quantity represented.

The seventh has rather a peculiar history, which probably some readers of this journal are acquainted with, as it was referred to recently in one of the Pharmaceutical meetings.

There has been an article of late extensively introduced and sold in this country under the name of "French quinine," a great deal of which is nothing more than muriate of cinchonia. A large lot of this so-called quinine was sold by a New York firm to a well known manufacturer in Cincinnati, who, having made up a very large lot of one-grain sugar-coated pills from it, discovered the fraud and returned the whole of it in that form. These pills were next bartered off to a firm in Easton, Pennsylvania, who disposed of them to one or more wholesale drug houses of this city.

One hundred pills, labeled "Quinia pills, 1 Gr.," were purchased from one of these last firms, with the information that they had been manufactured in Cincinnati and obtained by way of Easton, as above mentioned.

This placed the correctness of their origin beyond a doubt, and when they were examined and found to contain nothing but muriate of cinchonia, with a little quinidia, the chain of evidence was complete. When the solution was examined under the microscope with sulphocyanide of potassium, it gave the characteristic crystals of sulphocyanide of cinchonia. A few quinidia crystals were also observed, but no quinia. There can be little doubt that the several parties were fully aware of the composition of these pills, and the fact, that they continue to sell them to the trade and the public, is humiliating to every conscientious pharmacist, as well as disgraceful to those knowingly dealing in them.

The use of sugar-coated pills, although very extensive, has many evident disadvantages. A very prominent one is that of their insolubility. Several of the samples examined were very difficult to dissolve, even the last particle going into the solution very slowly, and only with the prolonged application of heat. Two of the samples, however, diserve credit for the readiness with which they dissolved at a moderate temperature. The only remedy for the objections to these pills, as well as other pharmaceutical products obtained from manufacturers, is in the persistent vigilance of the pharmacist, so as to guard carefully against impositions of this character.

When the products of the manufacturer come to be more frequently and critically examined, a great step will be gained for the advancement and elevation of our profession; thus bringing it nearer that perfect standard, which is of such vital importance.—*Am. Jour. Pharmacy.*

To the Editor of the Pharmacist:

I am not aware whether it is generally known among the profession that the intense bitter, and to many persons disagreeable taste of sulphate of quinia, can be readily masked when this remedy in the powdered state is desirable for administration to such patients who cannot take pills, or to infants and children.

I have recently observed the following fact: that if the quinia salt is mixed with an equal part, by weight, of bicarbonate of sodium, the bitterness of the quinia is scarcely perceptible. This modification of the taste of the remedy is, no doubt, due to the property of the impregnation of the sense of taste with the alkalinity of the soda salt.

Richmond, Va. L. E. SALE, *Apothecary.*

THE BOTANICAL SOURCE OF MEDICINAL RHUBARB.*

Regel's *Gartenflora* for January contains, among other things, not the promised revision of species of *Rheum*, but a figure and discription of, and some historical notes on, *Rheum Palmatum var. Tanguticum*, by Maximowicz. Although he does not dispute the fact that *Rheum officinale* of Baillon, figured in the December number of the *Botanical Magazine* of last year, yields a commercial Rhubarb, he contends that the drug known in England as Turkey Rhubarb, which came to us through Siberia by way of Kiachta, was the produce of the plant he describes. We say came, because the trade from that source has been destroyed, not, as Maximowicz says, in consequence of the attempt of some of the tribes to overthrow Chinese rule, but, as related in Flückiger and Hanbury's "Pharmacographia" in consequence of the very strict supervision exercised by the Russian Government. In the work just named a very full history of

*From the *Gardener's Chronicle.*

medicinal Rhubarb is given. · Maximowicz's plant was collected by Przewalski, in 1872-3, in the vicinity of Lake Koko Nor, North-West China. It is, or was, extensively cultivated in that district, and the wild plant was also collected. An account is given of the method of its cultivation and preparation, but this part adds little to our knowledge of the requirements and conditions necessary for the profitable cultivation of Rhubarb. The plant figured agrees in all respects with a specimen in the Kew Herbarium labelled "Rheum palmatum, from Pallas," and also with another from Dr. Lindly; and there seems little doubt that the account given of its previous introduction about 125 years back is correct. The Russian officials stationed on the frontier were instructed to obtain seeds or plants of the genuine Rhubarb, if possible, and in 1740 they succeeded in obtaining a quantity of seed, though they had to pay a high price for it. But the "heathen Chinee" was too crafty for them, the plants raised from this precious seed proving to be nothing more than the well known Siberian *R. undulatum.* However, in 1750 the true plant was procured, and from Russia it spread over various parts of Europe, including Britain, so after all we have, according to Maximowicz, been seeking for a plant we already posessed. He goes on: "Let it be admitted that we now posess two species which furnish a superior quality of Rhubarb, still *R. palmatum* has the advantage of being the genuine plant that produced the drug whose reputation dates from the time of the Arabian and Greek physicians." Speaking of the cultivation in Europe of Rhubarb for medicinal purposes, Maximowicz says that *R. palmatum* has proved rather unprofitable on account of the principal root decaying, and thus leaving only the less valuable lateral ones; and he adds that to a certain extent this has been the case with other species. So far as this country is concerned, we do not think these remarks are applicable. There is certainly a difference in the hardiness of the species. R. officinale was rather severely injured by the frost at Kew last spring. We know nothing respecting the constitution of R. palmatum, but R. Rhaponticum, undulatum, and others are hardier than R. officinale.—*London Pharmaceutical Journal.*

EDITORIAL.

WHAT IS CINCHO-QUININE?

We print in this number of the PHARMACIST a reply to this query, which we think will throw additional light upon the cupidity and knavery of the makers and venders of nostrums, and particularly upon the makers of "Cincho-quinine," which, as is conclusively shown by the careful and elaborate analysis of Professors Scheffer and Diehl, *is a fraud.* None who are familiar with the history of this nostrum needed the assurance of such high authority to convince them of this fact; but it is fortunate that the facts presented come from so eminent a source as to forever set at rest any doubt of what has been very generally believed by all well-informed pharmacists.

It is fortunate that we have at least two conscientious chemists in the United States, who cannot be bought by the usual fee, and made to say just enough of the truth to make the deception all the more a *lie*—two honorable chemists, who have more regard for the welfare of the sick than for a few paltry dollars.

The thanks of the medical and pharmacal professions are due these disinterested chemists, who have, at so much trouble, exposed one of the most ingenious *frauds* ever offered the medical profession; and now that the fraud is known, we call upon the medical press, who have done so much in times gone by to aid in this deception, to make honorable amends by publishing the facts pertaining to this analysis. For several months the makers of "cincho-quinine" have industriously circulated a printed statement of several chemists, giving the results of so-called analyses, averring that this nostrum contained *appreciable quantities of quinia.* We are disposed to inquire whether these analyses were ever made? and, if made, whether these wise men, or any one of them, discovered *how much* quinia was present? or were they *directed* to proceed no farther than to determine that a given reaction produced a given *color?* For the honor of American chemists we trust that some one of these wise men will arise and explain by what process the presence "of decided quantities of the alkaloids quinia, quinidia and cinchonidia" were found in the nostrum.

We *positively know* and can name several of the chemists whose names are attached to the certificates of the circular issued by this nostrum house, that they did not isolate the alkaloids as stated, (and should opportunity be offered us we will satisfactorily demonstrate to the profession that these men lack the essential knowledge and familiarity with the alkaloids of Peruvian bark necessary to be able to recognize the presence of them in the nostrum). It is, therefore, to say the least, a gross prostitution of chemical science (or a pretended knowledge of the science) to certify to the presence of an alkaloid, supposed to constitute the chief value of the compound, and by just inference, thereby attesting the truth of the claim; when, if they knew any thing whatever of its composition, they knew the alkaloid existed in infinitesimal quantities, such as can be found in any medicinal chemical substance as an adherent impurity. If these *wise* chemists would but test the sulphate of cinchonia of the market, they would, no doubt, find it to contain the "decided quantities of quinia" which they detected in the nostrum—this accidental impurity merely affording to their statement the color of truth without its substance.

The world can well dispense with the services of such chemists, and their prosperity will only indicate a lessening regard for professional honor and honesty.

TRANSACTIONS OF PHARMACAL COLLEGES AND SOCIETIES.

CHICAGO COLLEGE OF PHARMACY.

[Abstract from the minutes of a meeting of the Board of Trustees.]

The April meeting of the Board of Trustees of the Chicago College of Pharmacy was held on Thursday, the 15th, President Mill in the chair.

The resignation of Dr. Trimble as Professor of Materia Medica and Toxicology, and as a member of the college, was, on motion, accepted.

On motion, a vote of thanks was tendered to the subscribers to the

Chicago Druggists' Relief Fund who, in the redistribution by the committee to the original donors pro rata of the balance left unexpended, generously donated their share to the Chicago College of Pharmacy. Those heard from are as follows: Mr. J. H. Miniszek; Messrs. Hanbury Smith & Hazard; Messrs. H. Planten & Sons; Mr. E. L. Hyatt; Messrs. E. N. & J. B. Laurence; Messrs. Whitall, Tatum & Co.

The following named gentlemen were elected honorary members of the College: Dr. C. Mehu, France; Dr. O. Hesse, Germany; Dr. J. E. DeVrij, The Hague, Holland, and Dr. W. Handsell Griffiths, Dublin, Ireland.

The Lecture Committee presented a recommendation that the vacancy in the Faculty, arising from the resignation of Dr. Trimble, be filled by instituting a competitive examination of candidates. On motion, adopted. On motion, it was resolved that the competition be limited to pharmacists. On motion, a committee was appointed, together with the Faculty, to conduct the examination of applicants.

Adjourned. J. J. SIDDALL, *Secretary.*

THE MARYLAND COLLEGE OF PHARMACY.

The twenty-third annual commencement of Maryland College of Pharmacy was held at the Academy of Music, Baltimore, Tuesday evening, March 23, 1875. Announcement of graduates by Prof. J. Faris Moore. Degrees conferred by the President, Jno. F. Hancock, as follows—names in order of merit:

W. C. Sandrock	Sulpho-carbolates	Maryland.
John Ayd	Copper and its compounds	do.
W. T. Snentzel	Podophyllum Peltatum	do.
Chas. Beck	Chromium	do.
A. McK. Snyder	Potassium and its compounds	do.
Wm. F. McCauley	Priosteum Perfoliatum	do.
John G. Huck	Digitalis Purpurea	do.
J. H. Schroeder	Iodide of Potassium	do.
Dennis Davy	Thea Chinensis	England.
A. L. Stephens	Mercurous and Mercuric Chloride	Virginia.
V. R. Jackson, Jr	Strychnos Nux Vomica	Maryland.
Alpheus H. Roy	Tinctures	do.
John M. Wiesel	Eucalyptus Globulus	do.
Geo. M. Bersick	Trillium Pendulum	do.

Prizes from the College to the graduating class were awarded by the President as named:

1st. Miller's Chemistry, 3 vols., to W. C. Sandrock.
2d. Fresenius' Chemistry, 2 vols., to John Ayd.
3d. Wormley's Micro-Chemistry of Poisons, to W. T. Snentzel.

Prizes from the Alumni Society to the graduating class:

1st. Blow-pipe set, to Chas. Beck.
2d. Burette set and stand, to A. McK. Snyder.

Prize from the College to the junior class:

Pharmacographia, to Henry Deitrich.

Seven junior class students received honorable mention.

The valedictory was delivered by Claude Baxley, M. D., Professor of Materia Medica. A very large and fashionable audience was in attendance, filling the spacious New Academy to overflowing. A profusion of flowers in wax and from the florists' hands were bestowed on each graduate, the Faculty also receiving like compliments from the class.

Very respectfully, etc., J. NEWPORT POTTS,
Rep. M. C. Pharmacy.

ST. LOUIS COLLEGE OF PHARMACY.

The annual course of lectures closed March 22, 1875, after two days' examination by the board of examiners and professors, consisting of Charles Habicht, J. M. Good, Charles Bang, Theodore Fay, Professor of Chemistry; Otto A. Ward, Professor of Materia Medica; Hubert Primm, Professor of Pharmacy.

Seventeen students passed the examination: Charles Geitner, Henry Rommel, John R. Ratoteau, H. W. Barkhœfer, Charles A. Lips, Joseph E. Flg, Francis Hemm, H. T. Bechtöld, Edward Gallenkamp, John G. Goehring, Wm. A. Brüchner, Ernest Krebs, Elliott Steinhauser, Fred T. Reichenbach, Wm. C. Bolm, James R. Watkins, Julius E. Koch.

Francis Hemm was awarded the prize for materia medica, Charles Geitner the prize for botany, and Henry Rommel the prize for chemistry.

The annual commencement was held at the hall of the college; Vice-President J. M. Good presenting the graduates with diplomas, accompanied with an appropriate address, after which Professor Otis A. Wall delivered the valedictory, which was replete with items of interest and good council to the young men who had just very satisfactorily finished the pharmacal curriculum of the *alma mater*, and who were about to begin the life struggle of the well-prepared and well-equipped educated pharmacist; and it only now devolved upon them individually how the "talents" they possessed would be utilized in their career as pharmacists.

The session just closed was a very successful one, numbering seventy-four pupils.

NATIONAL COLLEGE OF PHARMACY.

The fourth annual meeting of the National College of Pharmacy, city of Washington, was held at the rooms of the college, in the colonization building, on Monday, April 5. The spacious lecture hall was well filled, and the interest manifestly greater than ever before in the history of the institution. The President, Mr. R. B. Ferguson, presided; Mr. J. C. Fill, Secretary. A more encouraging exhibit could scarcely have been made, than the facts presented by the reports of the officers. The finances are in a quite satisfactory condition, the cabinet has been greatly enriched, and the membership is steadily increasing. A comprehensive and able report was read by the Committee on Progress of Pharmacy, and discussion became general and animated.

In his eloquent address the President spoke earnestly of the prospects of the college, and the duties every individual pharmacist owes to society, to his profession, and to himself, in an educational point of view. He recommended that materia medica and botany be made two separate chairs, and that the college, at an early day, carry into effect its expressed object of publishing a pharmaceutical journal.

The faculty, at the beginning of the late session, consisted of E. T. Fristoe, A. M., LL.D., Phar. D., Professor of General and Analytical Chemistry; R. H. Stabler, M. D., Phar. D., Professor of Materia Medica and Botany; and Mr. G. G. C. Simms, Professor of Pharmacy. Early in the course Professor Simms discovered that his laborious duties as a member of the faculty so seriously interfered with other interests as to necessitate his resignation. Oscar Oldberg, Phar. D., was called to succeed him. Thirty-four students attended the session, three of whom will receive the degree of Doctor of Pharmacy.

A very valuable addition to the cabinet is expected during the approaching season, Mr. Rudolph Oldberg having kindly offered to prepare and present to the college a herbarium of several hundred indigenous plants—preferably officinal ones.

A committee was appointed and instructed to communicate with the medical fraternity of the district with a view to a conference and consultation with reference to the composition and use of so-called "elegant pharmaceutical specialties."

Professor Oldberg announced to the meeting the organization of an Alumni Association of the college.

The election of officers for the ensuing year resulted in the re-election of Mr. R. B. Ferguson as President; F. S. Gaither, Phar. D., and F. D. Dowling were elected Vice-Presidents; Oscar Oldberg, Phar. D., Corresponding Secretary; W. S. Thompson, Treasurer; Rudolph Oldberg, Librarian and Curator; J. C. Fill, Recording Secretary; and John A. Milburn, John R. Major, W. G. Duckett, J. D. O'Donnell, and Charles Becker, additional Trustees.

THE AMERICAN PHARMACEUTICAL ASSOCIATION.

A meeting of druggists and others interested in the American Pharmaceutical Association, which meets in the City of Boston September 7, was held March 23, at the rooms of the Massachusetts College of Pharmacy. The meeting was fully attended, many of the leading druggists, both wholesale and retail, being present. The committee appointed to solicit subscriptions to the fund for the entertainment of the Association presented their report, which was accepted. The committee had met with the most gratifying success in carrying out their work. About $6,500 had been subscribed, and more was promised. A plan for the entertainment of the Association was presented and referred to the executive committee. Forming a part of the proposed entertainment are a reception and banquet at the St. James Hotel, to be tendered to the visiting members by the druggists of Boston, a concert at the Music Hall, a harbor excursion, etc. An executive committee with full powers was appointed as follows: Joseph Burnett (chairman), A. R. Bailey, L. Babo, S. M. Colcord, S. Carter, Henry Canning, E. H. Doolittle, W. S. Folger, M. H. Gleeson, W. F. Horton, T. L. Jenks, R. R. Kent, J. S. Melvin, G. F. H. Markoe, J. S. Orne, I. B. Patten, W. B. Potter, N. J. Rust, B. F. Stacey, C. A. Tufts, B. O. Wilson, S. A. D. Sheppard. The coming meeting of the Association promises to be the largest ever held, it being expected that at the meeting of the Association in September upwards of five hundred druggists from all parts of the country will be present and take part in the proceedings.

LABORATORY NOTES.*

BY CHARLES R. C. TICHBORNE, PH. D., F. C. S., ETC.

On the Solution of Alloys and Metals by Acids.—Having to form a number of estimations of tin, in alloys of tin and lead, I found it necessary to effect solution of the mixed metals in hydrochloric acid, and to devise a quick and expeditious method of bringing this about without loss of substance. The alloys were dissolved in the ordinary manner and according to the usages of laboratory experience, that is to say—in each case a weighed quantity of the alloy was coarsely rasped by a clean plumber's file, and placed into a rather capacious flask, with the necessary quantity of pure hydrochloric acid; an Indian-rubber stopper was inserted, through which passed a short tube. The flask was placed upon a sand bath at an angle of about forty-five degrees, so that no loss from spitting could take place up the neck. Platinum was introduced for the purpose of making an energetic voltaic circuit, and to assist the solution. The action with the alloy it iself energetic enough at first, but it gradually subsides and becomes languid after the hydrochloric acid has become in any degree saturated. If the platinum, however, be introduced, this sluggishness is avoided. From the nature of the experiment, time was an object of considerable importance, and yet a great excess of acid was not desirable. The introduction of platinum foil to facilitate solution of other metals is no novelty, but I found it convenient to use a modification, which I consider sufficiently important to note.

From the electrical condition of the platinum foil and its great attraction for the electro-positive hydrogenium, an intermittent and rather curious reaction is set up in the flask where solution is effected. The platinum foil sinks on its introduction until it touches the particles of metal lying upon the bottom of the flask, when it instantly becomes covered with the electro-positive hydrogenium, and the foil rises to the surface of the liquid, and there discharges the hydrogen gas, and then sinks again until it comes in contact with the alloy, when the phenomenon is repeated as long as any alloy remains. It is therefore self-evident that this intermittent process must greatly retard the consummation of perfect solution.

To remedy this, I substitute small spheres of platinum about the size of swan shot. The rounded particles of platinum act perfectly, the hydrogen being much more readily illiminated from the spherical surface, and in no case does the platinum float. If the operation is performed in a flask, as recommended, from the shape of the vessel these particles of platinum are also in actual contact with the alloy during the whole of the process.

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* From the Proceedings of the Royal Irish Academy, Vol. II., Ser. II., (Sci.)

Solution is effected in nearly half the time, and the loss upon the platinum shot (probably from attrition) was found to be only 0·0001 per cent. during the solution of four grammes of alloy. I may mention that the platinum shot referred to can be procured at any of the metallurgists who produce the fused platinum in this form.

On Fluorescence as a Means of Detecting Adulteration.—The following note will be interesting as illustrating how the the fluorescence of any substance may be used for its detection in the presence of a non-fluorescent substance:

About seven years ago I made use of this phenomenon for the detection of turmeric when present in mustard in a report upon the commercial aspect of that substance.*

Lately it has been referred to by one of the public analysts in England as a method by which turmeric may be detected, and as it is so extremely delicate in its results, and yet so easy of application, I have thought it desirable to draw attention to the general principles upon which this phenomenon of fluorescence may be used for such purposes, and also with the view of laying claim to the idea.

If the adulterant is fluorescent, and the substance into which it is introduced is non-fluorescent, we have at once a ready means of examining any number of samples with much more delicacy than the usual chemical reactions will give. Thus, let us take the one to which we have already referred, the mustard of commerce.

The seeds of the black or white mustard yield a yellow coloring matter, soluble in spirit of wine which is devoid of fluorescence. Turmeric is always present in the inferior qualities of this condiment, because the actual adulterant is wheaten flour or rice, the turmeric being necessary to bring the white adulterant up to the same shade as the ground mustard seeds, therefore the samples vary from 0·5 to 0·05 per cent. of turmeric. Now, with such minute quantities of turmeric the alkaline test test is very unsatisfactory—in fact, all chemical reactions are unsatisfactory when dealing with such a minimum of adulteration.

But the great elegance of this fluorescent test consists in the fact that within reasonable limits, *the more dilute the solution the more strongly* does the fluorescence test come out. The non-fluorescence of the coloring matter of all substances that are adulterated with a fluorescent substance should, in the first instance, be exactly and scientifically determined. This is easily done by any one who has the necessary arrangements. In the case of the mustard yellow, Mr. H. Draper kindly examined it for me, by the light of the spark formed between two steel wires (such a spark being the best for the purpose).

The steel points were placed in connection with a four-inch intensity coil, and a small leyden jar was interposed in the circuit. The battery used consisted of three Groves elements. In examining by this method, ordinary glass vessels must be discarded, because even the strongly marked fluorescence of turmeric is more or less masked by the blue fluorescence of the glass.

**Medical Press and Circular.*—Report on the Adulteration of Mustard, Vol. 8, New Series.

In a quartz cell (two plates of quartz in a frame of gutta percha), these observations can be carried on with the greatest accuracy. Mr. Draper's observations prove that, whilst the coloring matter of the true seeds gave no fluorescence, the presence of so small a quantity of turmeric as ·005 per cent. could be readily detected.

Before we are justified, however, in using this phenomenon as the test for the presence of any substance, it is necessary to put it to a crucial examination, such as that detailed above, to find out how far the particular substance under examination is capable of giving fluorescence. But it is not at all necessary that we should submit it to the light of a spark in the practical application of the test. The fluorescence of an ordinary white glass flask is not observable under the ordinary diffused light of a laboratory, but the ordinary fluorescent substances (so-called) are easily recognized under such conditions. It is only necessary, therefore, to form a tincture of the substance to be examined. The observation of Mr. Horner,* who finds that fluorescence is wonderfully developed by castor oil, may be made use of with great advantage. A drop of castor oil that has been passed through adulterated mustard, upon a filter, appears green when dropped upon a black plate in ordinary daylight. If the mustard is pure, no coloration will be perceived. I have met with some specimens of "saffron" (the stigma and style of *Crocus sativus*) which give a flourescence. They were evidently adulterated, because the flowers of saffron give no fluorescence. This saffron is a most expensive drug, and is therefore very liable to adulteration.

On the Printing Inks of the Sixteenth and Seventeenth Centuries.—The printing inks of the present century differ somewhat from those of the sixteenth and seventeenth centuries, and as this difference may affect the preservation of valuable works of art, I have thought it desirable to embody my observations upon this subject in a short note.

The present ink used in printing books and valuable works of art essentially consists of carbon in a fine state of division, ground up with a mixture of oils, soaps, and a substance called printers' varnish.

This last named substance may be viewed as the important vehicle by which the carbon or pigments is bound to the surface of the paper. The printers' varnish is, in all good printing ink, linseed oil, more or less oxidized—but the oxidation may vary in degree from its first stages, known as ordinary drying oil, and made by the action of acetate of lead upon linseed oil, or it may be burnt until it becomes a stringy varnish that can be drawn into threads.

The first is a fluid linseed oil, hardly changed in its properties, whilst the last is a tough, resinous mass, scarcely soluble in oils, and quite altered in character from the original compound. This last may be considered as a glyceride of lineolic acid.

I have found that the older printing inks are more easily saponified and washed off by alkalies, than those of the last century, and that in this respect there is a marked difference. In their general character they agree, as carbon seems to have been the basis of printing ink from the time of Johann Faust, and from this reason printed matter will bear the action of acid oxidizers, or bleachers, with impunity; but many, if not all, the printing inks of the fifteenth and sixteenth centuries are more or less sensitive to the action of alkalies. Some specimens are so extremely sensitive to this alkaline influence, that on introducing them into a weak solution of ammonia, the characters instantly float off the surface of the paper, although they may have previously withstood the action of a powerful acid bleaching bath. The only explanation that I can offer is that the oil or oils used as vehicles were not formerly submitted to the boiling process, which in the more modern inks has thoroughly resinified them.

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* Philosophical Magazine, September, 1874.

It is also probable that copaiba or other balsams were freely used in the more ancient inks. These balsams are easily acted upon by diluted alkalies.

It will be seen by the following details that this peculiarity was not confined to one country.

Ink insoluble, or nearly insoluble in alkalies.	*Ink soluble in diluted ammonia.*
Various pamphlets published in England and Ireland, 1720 to 1730.	"Agricola. De re metallica," Basileæ, 1561.
Modern English Inks, all the specimens tried.	Some of Albert Durer's plates.
Modern Leipzig Ink.	"Libri Solomonis," Paris, 1542.
	"Titi Livii Historiarum Libri," Amsterdam, 1635.
	"Le Martyrologe Romaine," Lyons, 1636.
	"Portraiture of his Sacred maiestie," London, 1648.

ADDRESS BY BARON VON MUELLER

TO THE VICTORIAN CHEMISTS' ASSISTANTS' ASSOCIATION, MELBOURNE, AUSTRALIA.

GENTLEMEN: Suddenly and unexpectedly called to the honor of addressing you this evening, I cannot enter at any length on an exposition of my views regarding the manifold objects which might be accomplished by your Society; but for the formation of which I wish to offer my best congratulations, and must now tender my warmest thanks for the honorable position assigned to me. You are all so well aware of the functions expected from Pharmaceutic Science as one of the main auxiliaries of Medicine, that it might appear superfluous to dilate at all on the professional positions and any of its duties which are devolving on you, and are to be maintained and elevated by you. At all events it might be most appropriate on this first occasion of my meeting you, to encourage your progress by a few words on the great services rendered in times past to the natural sciences by some of those celebrated men who arose from the same profession as your own. In instancing some of the discoveries which emanated from the study and laboratory of pharmacy, we can not go back to times when no strict limitation as yet existed of pharmacy as a distinct profession, when indeed the investigation and preparation of chemical substances and organic compounds for therapeutic use formed an integral ordinary part of the medical practitioner's work. Among those who in the early days of a distinct recognition of pharmacy distinguished themselves prominently, was Marcgraf, a Prussian gentleman who, about one hundred and twenty years ago, discovered magnesia and alumina, and first showed the identity of beet and cane-sugar (1747), perhaps little foreseeing, at the time, what an enormous influence this discovery would exercise in generations afterwards, by raising a local supply of sugar in countries far outside of the tropical zones, and by providing thus also additional means for the rotation of crops through most nutritious stable food, and for facilitating the due maintenance of the fertility of any arable soil. Soon subsequently arose a still greater genius in pharmaceutic science, Carl William Scheele, a German by birth and descent, a Swede by fame. While an apothecary's assistant in Malmö and Stockholm, he discovered fluoric, boracic, hydrothionic, tartaric, citric and oxalic acids. He analyzed first the constituents of bones. In Upsala, still merely an assistant, he became acquainted with the great renovator of zoology and phytology, Linne, and also with Bergmann, so famed for his extensive analyses of minerals and crystallographic researches on them, and here (about 1774) it was where he made the important discovery of chlorine, solely and also independently of the British divine Priestly, and of Lavoisier, the latter soon slain as a victim of the atrocities of the first French revolution, while Priestly encountered the furious hatred of fanaticism and jealousy, at a far more recent time than either Galileo, Brahe or Kepler, and was indeed obliged take refuge in the transatlantic States. Scheele also discovered nitrogen before he had even established a pharmaceutical business of his own, which took place at the age of thirty-five, and then followed his discovery of baryta, manganese, prussic acid, and some other most important chemical substances. His luminous career, however, was cut off at the early age of forty-four. Some of the researches of Scheele, and subsequently of Davy, led to the first steps of photography. Vauquelin, who may be regarded as the founder of the qualitative organic analysis, was at first a pharmaceutist; his great countryman, Fourcroy, who was the son of a chemist, had the merit of introducing the new weights and measurements in France, and also of improving vastly chemical nomenclature. Chaptal, born in 1756, passed from the pharmaceutical to the medical career, was minister of home affairs under the first Napoleon, and was raised by Louis XVIII. to a peerage as Count Chanteloup, in acknowledgment of his great chemical discoveries, so well applied to industries and agriculture. Dumas, born in 1800, an ornament to the science of this century, was first a pharmaceutical chemist of Alais. We owe to him many essays on organic chemistry, atomic weights, substitutional proportions, and other chemical compounds; he also was minister of France, holding the portefeuille of trade and agriculture for two years. He left us a great work, "Traite de Chimie appliquee aux Arts," in eight volumes. Had he never done any thing else than drawing Pasteur into his luminous path, he would deserve our thanks for all times. I must pass on briefly to other great Frenchmen, such as Pelouze, Pelletier and Brogniart, who were by descent or early occupation connected with the pharmaceutical profession; Pelletier being the discoverer of quinine and many other alkaloids. Brogniart still adorns the science of France, and became the principal founder of vegetable palæontology since the earlier part of this century. Of his friendship, and that of another leading palæontologist of this age, the venerable Gœppert of Breslau, who also was active in the pharmaceutic profession during his earlier years, I may well feel proud. Forchhammer, in the duchy of Schleswig, was brought up for the pharmaceutical career. A generation afterwards I spent several years in the very house in which this famed geologist and oryctologist received his first education for the natural sciences. His. extensive comparative analysis of seawater, also of many algæ, may be known to many in this room. He was Sir Roderick Murchison's stronghold, when the latter investigated the geology of Scandinavia. Oersted, the friend of Forchhammer, the brother of a Danish prime minister, the illustrious discoverer of electro-magnetism, was the son of a pharmaceutic chemist, and passed himself through the years of pharmaceutic apprenticeship; he even conducted for some time a pharmaceutic business of his own. He was the founder and first director of the Polytechnic School of Copenhagen, and an extensive and ingenious writer on the natural sciences in relation to religion and poetry, not to mention the various original contributions towards physical and chemical science. It is a pleasing recollection to me to have met this leading discoverer, and also Forchhammer, at the meeting of the German Association of Medical Men and Naturalists, held in Kiel in 1846. In Britain also arose some brilliant spirits, through early, though sometimes brief engagements in the pharmaceutic career, viz., Sir Humphrey Davy, who acted as assistant to a surgeon and chemist at the commencement of his studies, whereby probably the first impulses to his investigations were given, although they soon extented to physiological subjects, such as respiration. Without him we might not have had the early discovery of the metallic bases of the alkalies, in 1807, nor his safety lamp for mining, nor his numerous applications of chemistry to agriculture, nor his almost poetic teachings; and more, perhaps, no Faraday would have guided us onward, had it not been for Davy.

Sir David Brewster, great through his labors in optics, the founder of the British Association, first also, if my memory carries me safely, for on it I must mainly rely in this address, imbibed his love for the sciences which he adorned while in the modest occupation of the pharmaceutic atelier. Baron von Liebig commenced his world-famed researches in a pharmaceutic laboratory at Heppenheim, where he worked for about a year; and perhaps the great worker, through fully half a century, for the lasting benefit of mankind would gave been lost to us, had not mere chance brought him first, though very briefly, to your own profession. I need not dwell here on his immensely extending organic chemistry, which through him passed into a new era, while through the practical applications of his inventions agricultural, physiological and technological chemistry passed also into a new state. I am proud to possess several letters on scientific subjects, addressed to me by this great man. The family of the Gmelins might be regarded as almost a pharmaceutic one through several generations. I can not, in these cursory remarks, refer to many of the very numerous men of science which sprung from this family. One of them was the celebrated traveler, Samuel Gmelin, who went with Pallas, Güldenstedt and Lapuchin for the advancement of natural history, through so much of Russian Asia, under the enlightened auspices of the Czar, from 1733–43. George Gmelin traversed with Behring much of Siberia, the results being lasting works on the fauna and flora of that wide tract of country. John Gmelin issued the thirteenth edition of Linneus' "Systema Vegetabilium," though engaged also as professor of medicine and chemistry. Ferdinand Gmelin advanced pathology much in the first half of this century. Christian Gmelin is the great chemical author of more recent date. Leopold Gmelin stands also prominent among the chemists of the century. Carl Gmelin published a large work on the flora of the Grand Duchy of Baden. Perhaps still more familiar to us here are the works of Heinrich Rose on analytic inorganic chemistry; he followed in the first instance the profession of his father and grandfather, who were pharmaceutic apothecaries. Gustav Rose, the brother of the above-named famed analyst, has widely advanced mineralogy, and was with Ehrenberg, the companion of Baron von Humboldt in his travels through Russian Asia. Buchner, the disciple of Trommsdorf, was one of those who raised pharmacy to a science; he conducted for many years an important Journal of Pharmacy, originating from his adoption of your profession. Poggendorf, born in Hamburg, entered also the pharmaceutic career, through which many discoveries in chemistry and galvanism took place. As editor of the "Annals of Physics and Chemistry," from 1824 to 1867, he issued the colossal series of one hundred and thirty-four volumes.

Pettenkofer, educated by his uncle, an apothecary at Munich, was for a long time pharmaceutic chemist to the royal family of Bavaria. We owe him the best method of obtaining gas from wood, researches on the cholera-poison, on ventilation, and on important sanitary measures. Wittstein, whose translated works on the preparation of chemicals used in medicine will be in the hands of most of you, embraced also your profession. A translation of his meritorious new work on organic analysis and on the chemical constituents of plants, is prepared by myself, and would, ere this, have appeared, had fair support been given to my position among you in this colony during late years.

In illustration of what has been done by the profession of pharmacy for chemical and allied sciences, I have singled out these few representatives among those who advanced leadingly on that path of discovery; many others have toiled along, but, as may be imagined, pharmaceutic gentlemen of high education have vastly promoted also other branches of knowledge. As might be supposed from their peculiar training, they have much advanced botany and also occasionally zoology. In both directions, for instance, Retzius, one of your profession, was active at Lund during the end of the last and beginning of the present century. He left his fame as an inheritage, well maintained by three sons, all professors of medicine, and distinguished for literary attainments. Ecklon, who lived for some time in the town of Husum, where I spent part of my youth, and who for many years was a chemist's assistant in Northern Germany and at Capetown, has rendered largely known the vegetation of Capeland, Caffraria Hottentot Land and other parts of South Africa, not merely as an exploring traveler, but as a phytological writer also. Rabenhorst of Dresden, for forty years a persevering and successful mycologist, was long under engagements simply as an apothecary's assistant. Schacht, celebrated for his anatomic and other microscopic investigations concerning plants, made some of the first discoveries which drew Schleiden's attention to him, in spare hours at a chemist's shop.

Nees von Esenbeck, a meritorious botanic writer, was first in active service as a pharmaceutist. Martius, the great Brazilian traveler and naturalist, the author of numerous works, the grandest among them that on palms, was the son of a pharmaceutic gentleman in Bavaria, and his brother, while continuing his father's business, became a leading author on Materia Medica. His friendship will not be oblivious to my memory. Among the three greatest of living bryologists, two are pharmaceutic chemists, namely: Hampe of Blackenburg, and Mitten of Hurstpier Point, in Sussex; both remained true through a long life to their adopted profession. Of the three living greatest of algologists, also, two are pharmaceutic gentlemen, namely: Kuetzing of Nordhausen, and Sonder of Hamburg; the latter, one of my oldest scientific friends, continues to conduct his original business up to this time, and it is therefore most praiseworthy that he was able, so circumstanced, to elaborate and publish in co-operation with the late lamented Dr. Harvey, three large volumes of the flora of South Africa. But where am I to pause? There are numerous others whose noble example should emulate you to raise here also the pharmaceutic standing. The strides of progressive knowledge have given pharmacy a place among the sciences; it is far more than a mechanic's art, if we view it in all its true bearings. An association such as you have so thoughtfully formed is well calculated to bring your profession to a deserving recognition. Well may you also aid here in progressive science, where a new country, with numerous of its latent resources, affords you multifarious opportunities to enter the field of independent discovery promisingly for success.—*Second Annual Report of the Victorian Chemists' Assistants' Association, 1875.*

OBITUARY.

In affectionate remembrance of Daniel Hanbury F. R. S. and F. L. S., Honorary Member of the Chicago College of Pharmacy, American Pharmaceutical Association, etc., who died at his residence, Clapham Common, London, England, on the 24th of March, 1875, aged 49 years.

By the death of Mr. Hanbury the profession has lost one of its ablest and most zealous workers, and one of its brightest lights. In order to better enable our readers to judge of the worth, and to do justice to the memory of our departed friend and colleague, we herewith reprint from the London *Pharmaceutical Journal* the following brief sketch of his life:

Daniel Hanbury was born 11th September, 1825. He was the eldest child of Daniel Bell Hanbury, who for many years was a valued member of the Council of the Pharmaceutical Society, and for eleven years its Treasurer. In early life he showed superior ability. At school he always maintained a foremost place, and attained a considerable degree of proficiency in classical studies, and also in water-color drawing.

In the year 1841 he commenced his business training under the firm of Allen, Hanburys & Barry, of which his father was an active member. Here his peculiar abilities were speedily manifested and appreciated.

His innate love of precision and accuracy were stimulated by the example and influence of Mr. Barry;* he became an exquisitly neat experimenter, and his handwriting assumed the form which those familiar with it will never forget, combining in a singular degree, firmness, force of character, and complete accuracy of detail. Whatever he undertook was done with uncompromising thoroughness. He never spared himself any labor, nor sought notice of those around him by talking of any effort he made, but quietly brought his fine abilities to bear with painstaking conscientiousness on the one matter immediately before him, whether dispensing a prescription, posting an account book, or writing a scientific paper. With such qualities he not only accomplished a very large amount of work, but the quality of what he did was almost faultless.

In the year 1844 he studied at the laboratory of the Pharmaceutical Society.

His pursuits early brought him in contact with the late Dr. Pereira who treated him with great consideration, and a warm friendship sprang the professor and his pupil, which lasted till the death of the former, and the remembrance of which has since often been manifested by Mrs. Pereira. His first contribution to this journal, was we believe, on "Turnsole," in January, 1850. From that time to the present his papers are scattered thickly through our volumes, numbering, according to the index, sixty-one, the last being incorporated in an article entitled "Cinchona or Chinchona," published on the 13th of February in the present year.

The series of papers on Chinese Materia Medica, published in the years 1860-1-2 were esteemed by those most capable of appreciating them and afford a characteristic example of accurate and careful research.

He never wrote without having original information to impart, and his papers uniformly bear evidence of careful investigation and thorough knowledge.

Most happily the work upon which he had been engaged for many years in conjunction with Professor Flückiger, the "Pharmacographia," was completed and published last year. This work is a storehouse of reliable information to which future generations will have recourse, and it is by his part in this important work that he will hereafter be best known. No one can read the historic sections of the book without being struck by the vast variety and extent of reading to which they bear witness.

Naratives of travels are especially attractive to him. He took nothing on second hand, but always sought his information from the fountain head. His library contained many Latin volumes of the early Portuguese, Dutch and Spanish voyages, to which he constantly referred, and he eagerly read modern books of travel likely to throw light on his favorite studies.

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* See *Pharm. Journ.*, July, 1864.

Whilst alluding to his writings we must not omit to mention the important part he took in the preparation of the Pharmacopœia of India, a work involving much labor. He was also one of those deputed to draw up the Admirality manual of scientific inquiry. Botany was the science to which he especially devoted his attention. He contributed to the *Transactions of the Linnean Society* the following papers, "Note on Cassia Moschata," H. B. et K., xxiv, 161; "On the Species of Garcinia which affords Gamboge in Siam" (G. Morella), xxiv. 487, and with Mr. Currey "Remarks on Sclerotium Stipitatum and Similar Productions," xxiii, 93; and numerous papers by him will be found in the *Journal of the Linnean Society*.

We believe he has collected a large mass of original information for a monograph on an important genus, and trust it may yet be given to science.

Occasionally he contributed an article to the literary periodicals. A paper containing curious information on Frangipani in *Notes and Queries*, and another on the botanical origin and country of Myrrh, published in *Ocean Highways*, for April, 1873, will be remembered by some of our readers. He occasionally contributed to the *Athenæum*, and a review of "The Countess of Cinchon and the Cinchona Genus" is about to appear in the *Academy*. He served on the juries of the International Exhibitions in 1862 and in 1867, and in the former year acted as secretary to the jury on vegetable products, the proceedings of which were conducted in French. In the year 1855 he was elected a Fellow of the Linneal Society, repeatedly served on its Council, and held the office of Treasurer at the time of his death.

He was also a Fellow of the Chemical Society, and Member of its Council in 1869.

In the year 1867, on his first nomination, he was elected a Fellow of the Royal Society, and a Member of its Council in 1873.

Of the Pharmaceutical Society he was a warm supporter almost from its origin. For many years (from June, 1860, to May, 1872) he rendered very valuable services as an examiner, often at great personal inconvenience, and he was a very constant attender at the evening meetings, to the usefulness of which he often contributed.

In 1870 he retired from business. He never married, but lived with his parents, to whom he was a most kind and affectionate son. Though possessed of ample means, his habits, we believe, both from principle and taste, were remarkably simple and inexpensive. He disliked and shunned every thing approaching ostentation, and luxury and indulgence were utterly alien to his life. He was always an early riser, and habitually got through an important amount of labor in his library before breakfast, and few indeed were the moments wasted from early morning until he again retired to rest.

Travelling on the Continent was one of his greatest pleasures. He read German. He had some knowledge of Italian, but he spoke French almost as a native, and hence travelling in France was especially attractive to him. It was not only in Paris, where the late Professor Guibourt and other scientific friends always gave him a warm welcome, but in the provincial towns and in the cities of the South, wherever there was a botanist of standing, he found an open door, and often gained an acquaintance who became a valued correspondent able to afford local or other special information.

But his journeys were not confined to France. In the year 1860 he visited the Holy Land with Dr. Hooker, and of late years he frequently spent considerable time at a residence belonging to a brother at Mentone Here he took great delight in introducing into the beautiful gardens the vast variety of interesting plants which can there be acclimatized.

During these journeys he frequently exercised his skill in water-color drawing, and the productions of his pencil, like those of his pen, always possessed the rare merit of *truthfulness*, whilst a thoroughly artistic effect was preserved. The same exquisite delicacy of touch was apparent in his drawing, writing or printing, or forming of Arabic, Chinese or other complicated characters.

In his frequent travels he seemed to have acquired something of a continental practice of using but little meat in proportion to the vegetable food taken. His diet was always spare, and it may be doubted whether his health did not suffer from the absteminousness of his habit of living, coupled with the constant strain to which he subjected his mental powers. But if this was so, the motive was never the gratification of ambition or other unworthy object, but the pure love of action and desire rightly to use the powers bestowed upon him. No feature of his life was, in fact, more striking than his freedom from that anxious self-assertion which too often disfigures the characters of men of science. Whilst remarkably self-reliant, he never sought to thrust himself into notice, but rather kept out of view until drawn out by those who had learned his worth. Though never robust, his health rarely impeded his activity, and slight ailments were resolutely disregarded. There were no indications of approaching illness until he was attacked with a severe *rigor*, about the 6th of March; this was followed by serious inflammation of the mouth, and on the subsidence of this local affection, symptoms of typhoid fever appeared. On the 18th, his condition first caused serious alarm. With little apparent change, his strength gradually failed till the evening of the 24th, when he peacefully passed away.

Long will the memory of his fine, thoughtful features and spare frame dwell with many who have known and valued him, and long will they continue to miss the decided tones in which his clear judgment and exact knowledge were unhesitatingly expressed. With him every benevolent object connected with science or scientific men has lost a munificent supporter.

Mr. Hanbury remained to the last a member of the Society of Friends, amongst whom he had been brought up. With characteristic reticence he scarcely ever alluded to his own religious experience, but his habits of devotion, and an occasional expression, afford evidence of the reality of his Christian faith.

That a man thus endowed with talents both natural and acquired should be taken away ere he completes his fiftieth year, is to us an inscrutible mystery. The light of eternity alone can reveal the full significance of any life.

THE PHARMACIST.

VOL. VIII. CHICAGO, JUNE, 1875. NO. 6.

LINIMENTUM SAPONIS.

BY F. M. GOODMAN.

Still hearing of the non-success of some pharmacists in preparing soap liniment, I was induced to try a few experiments with it. Not being troubled by its congealing in cold weather, if properly prepared, my experiments were turned to making some that would congeal, and observe where the difference was. Knowing that a great many substitute stronger alcohol for alcohol, in the formula, and also that the sawdust and scrapings of dried soap are generally used, which, although both are wrong, are very apt, one or the other, to be used, especially the latter, without due allowance being made.

But let us see what constitutes "soap." The Pharmacopœia says: "Soap made with soda and olive oil." It does not give its specific gravity; its hygroscopicity is not mentioned, nor any conditions whereby it might be compared. Turning to the Dispensatory, it says that soap contains 21 per cent. of water; and it also gives the chloride of sodium test for water.

I took a sample of soap that had been in the store about two weeks, and had dried somewhat, but after boiling and weighing it was found to have lost 20 per cent. I next tried the dry soap, and found it lost 4 per cent. And as all the water is not extracted by this process, taking the first experiment, it would be safe to say that 3 per cent. remained, and that 2 per cent. was lost before being examined, making the amount of moisture 25 per cent., which, I think, about represents its condition when we receive it; and, as this condition varies so much, the officinal soap should be in its most stable condition—dry, or in coarse powder. If we always make this allowance for the extra quantity of soap we are adding in making this preparation, we shall not be so prone to attack the officinal formula. It would have been better had the formula given directions for using the soap in powder. If so, it would have read thus:

Soap (in coarse powder)	3 troy ozs. 96 grs.
Camphor	2 troy ozs.
Oil of rosemary	½ fluid oz.
Water	6½ fl. ozs. 144 minims.
Alcohol	2 pints.

By comparing the different experiments in the following table, it will be seen that 5 and 6 did not congeal, while 1 did partly. This, I think, is owing to the use of heat, and consequent evaporation, and to the soap being a little too dry. The given temperatures were taken after an exposure of between two and three hours, excepting the last, which was after twenty hours:

CONDITION	1.	2.	3.	4.	5.	6.
At 26°...	Partly Congealed	Congealed.	Congealed.	Congealed.	Turbid.	Turbid.
At 45°.....	Turbid.	Congealed.	Congealed.	Partly Cong'l'd.	Turbid.	Turbid.
At 32°.....	Turbid.	Congealed.	Congealed.	Turbid.	Turbid.	Turbid.
HOW PREPARED.	Alcohol, moist soap, digested with hot water.	Alcohol, dry soap, digested with hot water.	Stronger alcohol, dry soap, digested with hot water.	Stronger alcohol, moist soap, mixed with cold water.	Alcohol, moist soap, mixed with cold water.	Alcohol, dry soap, mixed with the proper amount of water.

In making this preparation, the writer would suggest putting all the ingredients into a bottle, setting aside in a warm place, agitating occasionally, and, when solution is complete, filter.

NOMENCLATURE AND LABELS.

BY ADOLF G. VOGELER.

Scientific terminology is divided from the Latin or Latinized Greek; first, for the sake of brevity and expressiveness, and secondly, in order to have a language intelligible to every scientist.

The knowledge of classic Latin had almost entirely become lost to the world, only yet cultivated and perpetuated in the monasteries of the Catholic church, when during the middle age it again became universal, even to such an extent that it was the exclusive language used at all academies by professors and students.

Now it is an imperative necessity to speak a language as done by the respective nationalities. English, when pronounced by a German according to his own mode of spelling, no longer retains its identity; the same, of course, being true in the reverse. Further do we see that, in olden times, letters were formed to represent *one* certain sound, and no more; and then words were spelled as they were pronounced, and pronounced as they were spelled. In the course of ages, words changed their sounds, while the lettering remained, and so it came that in some languages four or more vowel sounds are represented by but one sign, and just so mutes made their appearance. Some languages remained remarkably pure from this unpleasant feature, as for instance, the German, Spanish, and also the Italian. This latter language, though not a true descendant from the ancient Roman, being composed of diverse foreign elements, it yet can not conceal its noble origin. In his treatise on the German language, Prof. Grimm sets forth as his first rule in orthography: "Spell every word as thou wouldst pronounce it correctly." Modern Italians adhere to this good rule more closely than even the countrymen of that illustrious scholar; and if we go back to early English, or Anglo-Saxon, rather, we shall find that this same rule holds good with them also.

I, therefore, believe that dead languages, even, should not be considered a playball for everybody, and that nobody has a right to shape them after their own pleasure. The sounds of the alphabetical signs of the ancient Romans have been, I think, pretty well established as being equivalent to Italian or German, with but a very few minor exceptions. Some years ago, a student from an American college maintained that, as Romans had first introduced monkry into England, it might be inferred that those institutions had also perpetuated true Latinism upon our present time, and that, therefore, the English people must have the correct pronunciation. Such, of course, is a very ridiculous theory, since several years, indeed, some of the most prominent universities in England have adopted what is most significantly termed the continental pronunciation. Yes, it is, in fact, that mode adopted by all nations of Europe, with one solitary exception. The Americans naturally follow in the footsteps of their progenitors. I sincerely hope a reform may be worked in this direction, for the sake of principle. Besides that, it is the great diversity grown up from the English system of pronunciation which strikes me, and which, in my judgment, should under no circumstances be permitted to perpetuate itself amongst the members of a profession so scientific and exact. To me it is utterly distressing to hear any given name distorted into so many different sounds. Take, for instance, this: tinctura opiĭ, or opīi, or even opīī! why not leave the letters their phonetical value to which they are entitled, and call the thing tinctura opii? One will say āquā, another ăquă; here you hear vinum, there it is called vīnum; ăcidi nītrici, or acidī nitricī, and so on indefinitely. Even a given person will not be consistent in his own nomenclature; at this moment he will speak about kino, and five minutes later you may hear him call for kīno. Linseed will be designated as semen lini after a bottle of champagne, while a glass of stout heavy London porter will have the effect of changing the poor innocent word to the graver form of līnī.

A necessary concomitant of this change of the value of vowels is the even more detrimental transposition of accents. A striking example is furnished by the name dulcămără, which makes me feel miserable every time I hear it rendered dulcâmârâ! Podophyllin is another fair sample of this class; but, indeed, there would be no end if I wished to continue such illustrations.

Let every pharmacist and physician candidly question himself if he was never impressed by such incongruities as here referred to; then if he must answer "yes," why not, I ask, apply the remedy at once, the *only* means through which uniformity in our nomenclature can be obtained, namely: *adopt the continental pronunciation.* The first, and at the same time most efficient, impulse to such a reform must and should come from our colleges of pharmacy, as the impression fixed upon the mind of the young student at those institutions will leave their mark forever. I do hope to see a time when students shall no more be reproached by their professors for "broadness," when they call the FLOWERING ASH *fraxinus* ornus.

In connection with this, reference may be had to the negligence evinced by the profession in regard to the printed labels used for marking packages. A neat label is very desirable. Not only is it a cheap medium for advertising, but it will, moreover, impress the public with a feeling of confidence towards the person they patronize, and also tend to lessen danger of mistakes in households. For instance, a customer some time ago requested me to tell him what "that" was, producing a package containing some *acetate of lead*, narrating that his wife had intended to use it for saltpeter in *pickling beef's tongue!*

But, I was going to say, it is for the *pharmacists* to educate the public in the use of proper names for drugs. They should never permit themselves to be instrumental in promoting and perpetuating false principles. It should be our constant aim to eradicate those innumerable synonyms in vogue, teaching at the same time one only *correct* term. It is but a few years since the danger constantly imminent from the names of drugs was vividly and sadly illustrated in this city, in the case where gelseminum was substituted for ivy.

Amongst druggists themselves it is a common but most abominable practice to use the word "spirit" in the plural form, viz.: spirits of camphor, sweet spirits of nitre, etc. This is utterly wrong, and should not be tolerated, no matter how many people say so. Put it constantly before their eyes and into their ears *correctly*, and you will see that even the people, that slow-moving body, must ultimately follow in your path. Further, we are in the habit of speaking about "spirits" of ammonia, which should be replaced by the proper "water" of ammonia, or simply "ammonia," for the "spirit" is quite a different preparation. Sweet spirit of nitre must not be designated as spirits nitre dulcis (sic!!). Those alchemistic names like *white vitriol*, *bluestone*, *butter of antimony*, *copperas*, etc., etc., ought to be discarded; they have served their purpose, and more scientific names may appropriately take their place.

SOLUBILITY OF SALICYLIC ACID IN GLYCERIN.—One part of salicylic acid dissolves completely in fifty parts of cautiously-heated glycerin, the solution remaining clear after cooling, and may be diluted without separating the acid. A solution made with one part of salicylic acid, 20 to 30 parts of glycerin, and 300 to 500 parts of hot water, has been used for some time in the surgical ward of the Bremen hospital.—*Amer. Jour. Pharm., from Phar. Zeitung*, 1875, No. 18.

COMPOUND TINCTURE OF GENTIAN.

BY EDWIN BAKER, SHELBURNE FALLS, MASS.

This tincture should be made by maceration and percolation, the employment of both processes being necessary to the production of a perfect tincture. When it is made in accordance with the officinal directions, it very soon deposits a pectine-like substance quite too familiar, in this tincture, to all pharmacists. Whether it does or does not contain a part of the medical properties of the tincture, it makes it so unsightly its presence should be prevented, if possible. I have of late, with satisfaction, prepared this tincture in the following manner: Reduce the gentian root, bitter orange peel and cardamom to a No. 40 powder; mix them in a wide-mouth bottle with twenty-eight fluid ounces of a menstruum composed of equal parts of strong alcohol and water; macerate for seven days, observing to agitate the mixture two or three times each day; then transfer it to a glass percolator provided with a sponge diaphragm; return the first two fluid ounces to the percolate to the percolator, and rinse the receiving bottle with a small quantity of the menstruum employed; when the liquid has disappeared from the surface of the solids, press the latter firmly, and slowly add sufficient menstruum to make the tincture measure two pints. Of course a larger quantity can be made at a time just as well, and in most instances will be.

This process produces a tincture as perfect as the most fastidious can desire. I have applied this process of manipulation to the compound infusion of gentian with equally pleasing results.

MEDICAL AND PHARMACEUTICAL EDUCATION.

To the Editor of the Pharmacist:

Allow me to congratulate the medical profession, through the columns of your journal, that there has been found one able champion of "Reform" among them, in the person of Dr. Wm. S. Edgar, editor of the *St. Louis Medical Journal*, and late President of the Medical Editors' Association at Louisville. In an able, scholarly address, he has pointed to the growing evil of graduating from our medical schools men who possess no fitting education or preparation for the responsible duties of the physician. Dr. Edgar is not alone in his position of antagonism to a system of education which is gradually but surely reducing the value of a diploma to the standard of a quack advertisement in the local newspaper; but he has forcibly given his views of the cause of this depreciation, and has so plainly given the reason for this cause, that but few who read will fail to understand, even though they may be guilty of *advertising* themselves as "professors" of the college "round the corner." He has chosen to dignify my former communication by quoting from it, to illustrate this evil; and, as I feel a hearty sympathy for him in his self-assumed championship of needed reform, knowing he will be vigorously opposed, I venture to offer him what help may be in my power, to "fight it out on this line"—not alone for the medical, but the pharmaceutical profession as well. To the former profession the evil of irresponsible *colleges*—which have become so numerous that on meeting a "Doctor" one dare not fail to call him "Professor"—is producing its legitimate results; and the hundred medical schools are each striving to render the title of "Doctor in Medicine" a reproach to an educated physician, as they already have succeeded in raising the status of quacks and mountebanks by lowering their own. The following is an extract from the address:

"A dozen, or fifteen or twenty doctors, more or less, meet and organize themselves into a medical faculty; a charter is procured and the chairs "fanned out" among them, and circulars scattered thick as blackbirds in autumn, heralding the wonderful advantages of this new school. A card is in all the publications of the city, secular and scientific; thus no means are spared to make known that Prof. A. has the chair of obstetrics, and Prof. B. that of surgery, etc., to the end of the list;* then come as many more names (with their addresses) as assistant lecturers, waiting to don the discarded mantles of their superiors. In this way twenty-five or thirty doctors are advertised into practice, over their neighbors, often every way their superiors, (except, perhaps, the teacher of chemistry, who has to be *paid*, as the public have little use for his wares.)

"Other professional men, observing the success of this shrewd trick to inveigle the public, and seeing no other way to keep even in the race, organize another school, and the community is startled by the announcement of as many more professors in medicine, born in a day. Thus a city of a hundred thousand inhabitants may boast two, or perhaps three medical schools, equipped and in full blast with large classes, where *fifty properly qualified students it might be difficult to find.*

"By 'beating the brush' in all directions, and offering all admission who apply, with or without education, with or without money or price, in this way are large classes collected; and if the graduating list of either school is not quite satisfactory (on account of the nine months, short cut) there is generally timber enough near at hand, none the worse for having been used, half a dozen or more 'ad eundems' are added, and the bill is filled, the effect upon the public satisfactory, which of course is the end sought."

This statement does not apply with any force to colleges of pharmacy proper; but it does apply to the so-called pharmaceutical departments of medical colleges, and notably to the school at Ann Arbor, where students are led to believe they may study pharmacy and graduate as pharmaceutical chemists without having had any previous instruction or training, yet derive the same benefits as if fully qualified. It is almost needless to say that such graduates are not looked upon with favor by pharmacists, and find, after all their study, that their time has been poorly expended under bad direction. In regular colleges of pharmacy the preliminary practice and study for three years are insisted upon as necessary, and are supposed to prepare the mind of the student for receiving instruction by lectures and illustration. If this preliminary study be helped by proper academic training previous to his entering the dispensing store, we may expect good results. The following, from the address, will apply to our profession nearly as well as to the medical:

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* And some of these professors, not content with all this advertising, manage to have the secular press notice their every movement; if they leave town for a day or a year, it is chronicled in the local of the daily. Any operation they perform of importance, the reporter hears of in time to be present and report. Thus utterly ignoring if not defying the code of ethics.

"That the most profound and difficult scientific studies should be entered upon (with any possibility of success) by those wholly untrained to study, with a limited knowledge of their vernacular, no ability to comprehend the scientific terms or technicalities in constant use, would scarcely be equalled in absurdity by admitting pupils to the freshman class of a college before they could read and write; hence, our medical diplomas are no longer sufficient evidence of medical knowledge. While the diplomas conferred by our literary colleges and high schools have lost nothing of their significance, as to the attainments of their possessors, as they were compelled to undergo examination before matriculation, as well as from year to year, as they progressed. Passing strange that the very college where examination preliminary to matriculation is more needed than any other, is just where it is omitted in the United States altogether. We rejoice to hear of the beginning of a better rule in a few medical colleges, where preliminary examinations have been timidly commenced.

"This practice of medical schools admitting every body that offers, has greatly impaired the discipline of many of our *literary institutions*, owing to the current sentiment that a 'college course' was not needed or required in medicine, so if students enter college who contemplate the study of medicine, (which we fear they seldom do now-a-days), they wish to pursue an *irregular course*, omitting the languages."

The application of this to pharmacy teaches the desirability of inducing our students to prepare themselves in the free schools of our favored land to receive technical and scientific instruction understandingly, as a saving of much hard work, and resulting in a far more complete knowledge of the subject "when school days are over."

Assuming that colleges of pharmacy intend maintaining a high standard for graduation, it is only common justice to the student to require a preliminary examination to entering upon the college course; else, some will ignorantly spend time and money striving to master what they are incapable of understanding. We trust that the colleges of pharmacy may not be numerous enough to lead to such competition as the medical schools suffer from; but while they are few in number, and managed by the men who have raised pharmacy from a mere trade to a professional standing, we would urge the inauguration of such a system as may forever prevent the prostitution of our colleges to the base use of designing men for the purpose of selfish advancement.

The "criticism" on my former communication does not need a reply, as it is evident neither of your correspondents had read my letter; or, if they had, certainly did not understand it.

Trusting this subject of education may receive more attention from thoughtful men, as well as from those chiefly interested in this branch of it from pecuniary motives, I again, from no motive unworthy, subscribe myself REFORMER.

VANILLA.

BY JOHN R. JACKSON,

Curator of the Museums, Royal Gardens, Kew.

Vanilla, now seldom, if ever, used in medicine, has an amount of interest attached to it, owing to its natural affinities, early history, commercial value and uses, that may render some notes on the subject worth recording.

There has lately been issued from the French press a pamphlet of some fifty odd pages, devoted entirely to the consideration of the vanilla plant in all its bearings. Considering, however, that the author is a member of the Chamber of Agriculture of Reunion, a good deal of the book is devoted to vanilla as a product of that island. Nevertheless, it is a valuable addition to the literature of the subject. Its title is "Etude sur la Vanille," par A. Delteil.

How many, and what are the exact species of vanilla which furnish the commercial article, has always been a question amongst authors ever since that genus itself has been known. It will be well, however, to trace the history of the vanilla and then to point out the opinions of more recent writers. The plant being, as is well known, a member of the *Orchidaceæ*, was pretty fairly described by the old writers. Thus, Pomet says in his "Compleat History of Druggs," that the pods or cods of about half a foot long, of the thickness of a child's little finger, hung upon a plant twelve or fifteen feet high, that climbs like a creeper; for which reason they grow most frequently upon walls or at the roots of trees, or else upon props or the like where they are supported. They have round stalks, disposed in knots like the sugar cane; from each knot there puts forth large thick leaves, about a finger's length, which are as green as the stalk, and fall off or wither away, as the great plantane does, after which come pods that are green at first, yellowish afterwards, and grow browner according as they ripen."

Originally a native of Eastern Mexico, it was in early times used by the natives to flavor their chocolate. It was brought to Europe by the Spaniards, but little seems to have been known about it or its uses till the middle or perhaps the latter part of the seventeenth century. Pomet says, however, that the "*Vanilla's* are much used in France for making up chocolate, and sometimes to perfume snuff"—the former being at the present time one of its chief applications, but the latter, so far as we know, having quite died out. Many varieties of vanilla are known in commerce, but as of old, the Mexican sort is considered the best. At one time, *Vanilla aromatica*, Swartz, was supposed to be the plant from which most, if not all, the vanilla of commerce was procured. Pereira mentions five species as probably contributing "some of the vanilla of commerce," namely, *V. planifolia*, Andrews, *V. aromatica*, Swartz, *V. guianensis*, Splitberg, *V. palmarum*, Lindl, and *V. pompona*, Schiede. By some authors *V. sylvestris*, Schiede, and *V. sativa*, Schiede, have also been considered good species, yielding some of the best Mexican vanilla. Dr.

Pereira, however considered them as varieties of *V. planifolia.* M. Delteil, in the pamphlet before alluded to, refers Mexican vanilla to the following species: *V. sativa, sylvestris, planifolia,* and *pompona*; Guiana and Surinam to *V. guianensis;* Bahia to *V. palmarum;* and that from Brazil and Peru to *V. aromatica.* A most recent authority, however, and a very trustworthy one, namely, the "Pharmacographia," of Professor Flückiger and the late Mr. Hanbury, gives the botanical origin of vanilla simply as *V. planifolia,* Andrews, and refers to no other species. Though indigenous to Mexico, vanilla is cultivated, as will be seen from the foregoing remarks, in various parts of tropical America, and has been successfully introduced into the Mauritius and Reunion, from whence large quantities are annually imported. Java also grows vanilla to a considerable extent. To the cultivator it is a remunerative crop in situations where climate and atmospheric conditions are suited to it. It is very easy of cultivation by fastening shoots to trees, into the bark of which they soon strike their roots, growing luxuriantly, bearing fruit when about three years old, and continuing to do for about forty years. Under natural conditions the flowers are impregnated by insect agency, but artificial fecundation is frequently resorted to—indeed it is one of the principal points of consideration in M. Delteil's work.

The gathering and drying of the pods, as described by Pompet, differs in some respects from the descriptions of modern writers. "When they are ripe," he says, "the people of Mexico, those of Guatemala and St. Domingo, gather them, and hang them up by one end in the shade to dry; and when they are dry enough to keep, they rub them with oil to hinder them from drying too much, and prevent their breaking, and then put them up in little bags of fifty, a hundred, or a hundred and fifty to bring them hither. Nevertheless, there are some who value their gain more than their conscience, who let them hang upon the stalks till over ripe, and receive from them a black fragrant balsam, that flows till the essential part of the *vanilla* is exhausted, and it can run no more; and then they gather the pods, and pack them up for sale as aforesaid." The plan now adopted is to gather the pods before they are quite ripe, and to allow them to ripen by alternately wrapping them in cloths and exposing them open to a moderate degree of heat. This process is said to preserve or develop their full fragrance. When ready for exportation they are made up into bundles and wrapped in paper. What the "black fragrant balsam," of which Pomet speaks, could have been used for, we have no record; indeed, referring to it in another part of his article, he says, "As to the balsam, the Spaniards keep that; we have none of it brought to us." His advice with regard to the choice of vanilla holds good at the present time. On this point he says, "Choose such as are well fed, thick, long, new, heavy, not wrinkled, or rubbed with balsam, and which have not been kept moist but of a good smell; and beware of those that are small and dry, and of little smell." The Mexicans in early times appear to have been very fond of the vanilla flavor in their chocolate, indeed, we are told that they were "mighty lovers of these plants."

With regard to the odorous principle of vanilla, it is shown in the "Pharmacographia" that it is not contained in the fleshy exterior portion of the pod, but in the interior alone. Its use is chiefly for flavoring chocolate and confectionery. It fetches a high price, and its imports are necessarily small when compared with other commodities.—*London Pharm. Journal.*

RULES AND EXAMPLES RELATING TO WEIGHT, MEASURE AND SPECIFIC GRAVITY.

COMPILED BY PROFESSOR P. W. BEDFORD.

WEIGHT.

Weight is the force of gravity towards the earth's center; weighing is the determination of this force.

U. S. P. recognizes "troy ounce" and grains in its formulas:

℥ j = one troy ounce = 480 grains.

"Avoirdupois," used in commercial transactions, and in the British Pharmacopœia:

1 oz. = 437½ grains. 1 ℔. = 7,000 grains.

METRICAL SYSTEM.

The metre (39.3709 inches) is divided into tenths, called deci-metres; into hundredths, called centi-metres; into thousands, called milli-metres. The cube of a centimetre is called a cubic centimetre, and is written 1 c.c.

The weight of distilled water equal in bulk to 1 c.c. is called 1 gramme, and the weight of distilled water equal in bulk to a cubic decimetre is called 1 kilogramme.

1 gramme = 15.434 grains (U. S. P.)

1 kilogramme = 15,434 grains (U. S. P.), about two and a fifth pounds avoirdupois.

More recent accurate trials give the equivalent of the gramme as 15.43235 grains.

(Delicate balances and reliable weights are indispensable requisites to every pharmacist.)

MEASURES.

Measures of capacity are used to properly apportion fluids.

(They should be correct, handled with care and kept clean.)

The wine gallon and its subdivisions are officinal.

WINE MEASURE, U. S. P.

Minims 60 = f ʒ j = m lx = grains 56.9.
480 = f ℥ j = f ʒ viij = " 455.7.
7680 = Oj = f ℥ xvj = " 7291.2.
61440 = Cong. j = Oviij = " 58328.8.
1 minim = .95 grain.

IMPERIAL MEASURE, B. P.

Minims 60 = f ʒ j = m lx = grains 54.6.
480 = f ℥ j = f ʒ viij = " 437.5.
9600 = Oj = f ℥ xx = " 8750.
76800 = Cong. j = Oviij = " 70,000.
1 minim = .91 grain.

1,000 C.C. = 1 litre = 2.1135 pints = f ℥ 33 + 394 grains.
29.53 C.C. = f ℥ j.

One fluid ounce = 1.804 cubic inches.
One pint = 18.875 " "
One gallon = 231. " "
One cubic inch water weighs 252.458 grains.

One line = one-twelfth inch.
One foot = twelve inches.
One yard = thirty-six inches.
One metre = 39.37079 "
Seconds pendulum = 39.1393 inches.

SPECIFIC GRAVITY.

Specific gravity is the relation of weight to volume. Distilled water at 60° F. and 30 inches pressure is the unit of gravity for all solids and fluids, and is called 1. or 1.000.

Fluids buoy up all solids with a force equal to the weight of fluid displaced.

Floating bodies displace their weight; immersed bodies displace their bulk.

Specific gravity is determined by (1) hydrostatic balance; (2) specific gravity bottle; (3) immersed cylinder; (4) hydrometer.

To determine specific gravity of solids, (*by* 1 *or* 2.)

Example:	Find weight of solid in air...............	420 grains.
	Weight of liquid displaced...............	160 "
	Specific gravity of liquid used...........	.900

160 : 420 :: 900 : 2.36.

If solid body is lighter than water, counterpoise a heavy weight in water, attach the light body, and proceed as before.

For fluids, use 2, 3 *or* 4.

No. 2. Divide weight of contents by weight of an equal bulk of water.

No. 3. Weigh cylinder in air, then in water, and note the loss.

Weigh cylinder in any other fluid, and note the loss.

Divide this loss by loss of weight in water—*i. e.*, by weight of an equal bulk of water.

No. 4. Specific gravity, or its equivalent, is indicated on the stem of hydrometer, at surface of the fluid in which it is immersed.

CALCULATIONS IN SPECIFIC GRAVITY.

Weight and specific gravity given, find measure. Divide weight (in grains) by specific gravity, and divide this by 455.7.

Example: 20 troy oz., specific gravity 1.42.

20×480÷1.42÷455.7=14 fl. oz.+380 fl. grs.

Measure and specific gravity given, find weight. Multiply measure by sp. gr. and divide by 480 for troy weight, by 437.5 for avoirdupois, or 15.434 for grammes.

Example: 20 fluid ounces, specific gravity .835.

20×455.7×.835=7610÷480 =troy oz. 15+410 grs.
÷437.5 =avoird. 17+162 grs.
÷ 15.434=grammes, 463.067.

Weight and measure given, find specific gravity. Divide weight given by weight of an equal bulk of water.

Example: 22 troy ounces. measure 16 fluid ounces.

$$22\times480=10760.$$
$$16\times455.7=7291.2.$$
$$10760\div7291.2=1.475.$$

RULES FOR CONVERTING DEGREES OF TEMPERATURE.

FAHRENHEIT TO CENTIGRADE.

Above 32° F. From the temperature given deduct 32, multiply by 5, divide by 9.

Example: $F^\circ\ 140-32\times5\div9=C^\circ\ 60.$

Between 32° and O° F. From 32 deduct the given temperature, multiply the remainder by 5 and divide by 9.

Example: $F^\circ\ 18.\quad 32-18=14\times5\div9=C^\circ-7.7.$

Below O° F. To the temperature given add 32, multiply by 5 and divide by 9.

Example: $F^\circ-22+32\times5\div9=C^\circ-30.$

CENTIGRADE TO FAHRENHEIT.

Above O° C. Multiply the given temperature by 9, divide by 5 and add 32.

Example: $C^\circ\ 100\times9\div5+32=F^\circ\ 212.$

Between O° and —17° C. Multiply by 9 and divide by 5. From 32 deduct the amount obtained.

Example: $C^\circ-10\times9\div5=18,\ 32-18=F^\circ-14.$

Below —17° C. Multiply by 9, divide by 5 and subtract 32.

Example: $C^\circ-30\times9\div5-32=F^\circ-22.$

RULES FOR PREPARING ALCOHOL OF DIFFERENT PERCENTAGES.

BY WILSON H. PILE, M. D.

1. *To reduce alcohol to a desired strength.*

Multiply the quantity of the alcohol (either in fluid ounces or in gallons) by the percentage strength (Tralle's alcoholometer), and divide by the required per cent.; the quotient gives the quantity to which the alcohol must be diluted by the addition of sufficient water.

2. *To make a definite quantity of any desired strength from a stronger alcohol.*

Multiply the required amount by the required per cent., and divide by the per cent. of the given alcohol; the quotient gives the quantity to which the alcohol must be made up by the addition of water.

3. *To make a mixture of any desired strength by mixing a stronger and weaker alcohol.*

Subtract the percentage of the weaker alcohol from the required per cent.; the difference indicates the quantity of the stronger alcohol to be used. Next subtract the required per cent. from that of the stronger alcohol; the result indicates the quantity of the weaker alcohol to be used. Mix the two results together, and, as the contraction will be more or less, add sufficient water to make the mixture equal to the quantity of the two liquids before mixing. For example, it is desired to prepare an alcohol of 60 per cent., by mixing an alcohol of 90 per cent. and one of 40 per cent.:

$$60\begin{cases}40=20 \text{ of the 90 per cent. alcohol.}\\ 90=30 \text{ `` `` 40 `` `` ``}\end{cases}$$

Add water sufficient to make 50 parts.

4. *To make a definite quantity of any desired strength by mixing a stronger and weaker alcohol.*

Ascertain the quantity of each alcohol to be mixed (by Rule 3). The proportion which the required amount bears to the quantity thus shown will indicate the relative proportion of each alcohol to be used. Thus, if 30 parts were required to be made from the two liquids given in the previous example, as 30 is to 3-5ths of the mixture, then 3-5ths of each alcohol must be taken, or 12 parts of the 90 per cent. alcohol and 18 parts of the 40 per cent. alcohol, adding sufficient water to make 30 parts.

SALICYLIC ACID AS A DISINFECTANT.

BY C. R. C. TICHBORNE, PH.D., F.C.S., M.R.I.A.,

Lecturer on Chemistry at the Carmichael School of Medicine, Honorary Member of the Chicago College of Pharmacy.

Some considerable interest has been created by a paper written by Professor Kolbe, in which he describes a process for the production of salicylic acid from carbolic acid, carbonic anhydride, and soda, one molecule of carbonic anhydride being introduced into the phenate of sodium, and one-half being converted into sodium salicylate. This process was an endeavor on the part of Professor Kolbe to produce salicylic acid on a cheap manufacturing scale. So far, there are still practical difficulties in the way, and the price has not fallen very considerably, the object the Professor had in view being the production of a powerful and cheap antiseptic. "The knowledge," says Professor Kolbe, "that salicylic acid could be so easily prepared from carbolic acid and carbonic anhydride, and that it could be again decomposed by heat into the same bodies, led me to think that, similarly to carbolic acid, salicylic acid might stop or entirely prevent fermentation and putrefactive processes, and act generally as an antiseptic."

Without wishing to deteriorate the value of Professor Kolbe's researches as regards the use of salicylic acid as a preservative, I wish to state that the physiological action of salicylic acid, and its general relation to carbolic acid, and particularly as a blood antiseptic, were all described as far back as 1872, in a paper read by myself before the Medical Society of the College of Physicians, Dublin, entitled "Disinfection in connection with Small-pox." The following remarks are partially reproduced from that paper, and bear upon this subject:

As regards antiseptic treatment in the blood, it is a subject with which, I think, chemists are justified in dealing. Medicine may act simply by a cetain portion of it getting into the circulation by diffusion, or by some inherent virtue of its own acting upon other constituents of the body, or it may act by virtue of a partial decomposition or oxidation occurring in the blood, and producing effects not directly produced from the medicament, but from an infinitesimally small amount of a new product being liberated in the nascent condition in the blood. Xylol's action is said to be due to the fact that it becomes an antiseptic in the blood. Now it is probable that, if it does act as such, its power is due to some product of oxidation. That it is really rapidly oxidized there can be no doubt, from the fact that a peculiar odor distinct from xylol can be perceived in the urine.

It is worthy of note that this hydro-carbon xylol C_8H_{10} may be viewed as either dimethylbenzene $C_6 H_4 (CH_3)_2$ or ethylbenzene $C_6 H_5 (C_2H_5)$. Now, if either of these be its true composition, the residual molecule benzene is the hydride of phenyl, the radical of the well known antiseptic carbolic acid. Thus, if we act upon benzene by bromine, which is merely a convenient mode of oxidizing, hydrogen is given off, and we get the bromide of the radical phenyl.

$$\left.\begin{matrix}\text{Phenyl—}C_6H_5\\ H\end{matrix}\right\}O=\text{Carbolic acid.}$$

The action of sulpho-carbolates, of which some medical men speak very highly, is that the carbolic acid *per se* acts as an antiseptic, being diffused into the circulation. I have tried experiments upon diluted solutions of albumen and vibrios, from which it would appear to me that the diluted solutions of carbolic acid destroy the activity of the vibrios before they coagulate the albumen.

In seeking for a remedy for internal disinfection of blood, it is evident from my point of view that we should try and search amongst the substances which will produce in the blood antiseptics slowly, but in a nascent condition. Carbolic acid is the most available antiseptic, for the production of sulphurous acid in the circulation would be out of the question; therefore, on consideration, the first compounds that will present themselves to our consideration are the methylsalicylates ($C_8H_7M O_3$) or the salicylates. Methylsalicylates, I find, are slowly but perfectly decomposed in the cold, and in alkaline solutions, such as the blood, therefore it is theoretically immaterial which is used.

Salicylic acid, if heated, is converted into carbolic acid and carbonic anhydride, and there seems to be a wonderful chemical reaction between these two substances, *i. e.*, carbolic acid and salicylic acid, thus either of them can with facility be formed from the other.

The salicylates only require one equivalent of oxide to convert them into carbonates, and carbolate of the metal, thus:

$$\overset{\text{Salicylates.}}{C_7 H_3 MO_3}+M_2 O=\overset{\text{Phenate.}}{C_6 H_5 MO}+\overset{\text{Carbonate.}}{M_2 CO_3}$$

And if we use dilute solutions, we get the same reaction with reagents. Thus, ferric chloride gives the same beautiful violet reaction independently if we use a carbolate, sulphophenate, or salicylate; it acts in each case upon the carbolic or phenol residue.

From the experiments of Kolbe, Thiersch, and others, it would now seem that salicylic acid is one of the most powerful antiseptics known, and therefore my observations are now confirmed by these experimenters.

Professor Thiersch proposes a powder of it used with starch for cancerous surfaces or unclean wounds. Although easily crystallized from alcohol or hot water, it is very insoluble in cold, and for antiseptic treatment of wounds I would propose the use of a solution in glycerine; three grains will dissolve easily in the fluid ounce of glycerine when warmed, and will remain permanently dissolved.

The salicylate of lead $C_7 H_4 PbO_3$ will probably be found a valuable salt for medical uses.—*The Medical Press and Circular.*

PURE SULPHATE OF NICKEL.

The salts of nickel employed in the electro-deposition of that metal are prepared from commercial nickel, which is an alloy of nickel, copper and iron, with traces of arsenic, containing from 40 to 90 per cent. of actual nickel. The author's process consists of four operations: Solution of the crude metal in acids; precipitation of the copper by iron; peroxidation of the iron, and conversion of the metals into sulphates; precipitation of the iron by carbonate of baryta, and crystallization of the sulphate of nickel. The nickel is first dissolved in seven to eight times its weight of aqua regia; the solution is evaporated almost to dryness; the residue is re-dissolved in water, using about five times the weight of the nickel employed. A little arseniate of iron remains insoluble, and is removed by filtration. Metallic iron, preferably small nails, is introduced into the hot liquid, to about the weight of the nickel employed. It is stirred from time to time to detach the copper from the iron. As soon as a piece of bright iron, introduced into the liquid, is no longer coated with copper, this process is complete. The whole is thrown on a filter, and washed repeatedly. The copper is then collected by sifting it under water, in a sieve coarse enough to let pass the coppery metallic powder, but retain the iron. The copper is dried, and is then marketable. The filtrate now contains merely nickel and iron. The latter is preoxidized, either by a current of chlorine or by treatment with nitric acid. Sulphuric acid at 66° Baume is then added, in the proportion of two parts to one of nickel employed, and the whole is evaporated to dryness to expel nitric and hydrochloric acids. The dry residue is re-dissolved in water, a part sometimes remaining insoluble, consisting of sub-sulphate of iron. From the solution the iron is thrown down by means of carbonate of baryta (artificial precipitated). This carbonate separates the iron as sequioxide, and forms at the same time insoluble sulphate of baryta, without acting upon the sulphate of nickel. The last traces of arsenic are thrown down along with the sesquioxide of iron. The precipitation is effected by gradually adding a slight excess of carbonate of baryta to the liquid, slightly heated, but not so as to exceed 50° to 60° Fah. It is complete when a further addition of carbonate occasions no effervescence, and does not become covered with peroxide of iron. Pure sulphate of nickel then remains in solution. It is separated from the precipitate by filtration, and the filtrate is evaporated till a pellicle appears on the surface, when it is set aside to crystallize.—*M. A. Terreil, in Scientific American.*

GLEANINGS.

Lewis C. Hopp having investigated the alkaloids and acids contained in *sanguinaria canadensis*, arrives at the following conclusions: Wayne's "*puccina*" is nothing more than the alkaloid *sanguinarina*, with some resin and coloring matter persistently adhering to it; and that Newbold's "*sanguinarinic acid*" is but a mixture of *citric* and *malic acids.—Am. Jour. Phar., May,* 1875.

J. B. Moore contributes, in the same number of the *Journal*, the following formula for Wine of Tar:

Take of	Tar, pure	16 troy ozs.
	Glycerin	
	Sherry wine	
	Honey	8 fluid ozs. of each.
	Acetic acid	1 fluid oz.
	Boiling water	6 pints.

Mix the glycerin, sherry wine, honey, acetic acid and boiling water together, in a stone jug, or other suitable vessel, of the capacity of a gallon. To the mixture add the tar, and shake the whole vigorously for several minutes. The vessel is then to be tightly stopped, and placed upon a stove or in a water-bath, resting upon folds of paper, and the mixture digested, for an hour or two, at a temperature of from 150° to 160°. During the digestion, the mixture should be frequently well shaken. When the digestion is completed, the mixture is to be set aside to macerate, in a warm place, for a few days, it being well shaken occasionally during the process. Lastly, strain through muslin, and filter the strained liquid through paper.

Nostrums.—A ring made of the hinge of a coffin and a rusty old sword hung by the bed-side are, in some districts, charms against the cramp. Headache is removed by the halter that has hung a criminal, and also by a snuff made from moss that has grown on a human skull in a grave-yard. A dead man's head, and especially the hand of a man who has been cut down while hanging, dispels tumors. Warts may be removed by rubbing them with a bit of stolen beef. The chips of a gallows, worn in a little bag around the neck, will cure the ague. A stone with a hole in it, suspended at the bed's head, will prevent the nightmare. Many verses are known, which, if repeated aloud, are credited with curing cramp, burns and other bodily troubles. When you have the whooping-cough, apply for a remedy to the first person you meet with riding a piebald horse—a ceremony that Dr. Lettsom, the physician, was fated more than once to become acquainted with. Amulets, hung in a little bag around the neck, are very widely credited with the power of warding off disease; the list of such substances is an ample one, but need not be given here. The anodyne neck-lace, which was a profitable affair for one Dr. Turner in the early part of the present century, consisted of beads made of white bryony root; it was believed to assist in cutting the teeth of infants around whose neck it was hung. One peculiar kind of amulet is the phylactery—a bit of parchment on which a few sacred words have been written; if worn on the person, it is a safeguard against disease and calamity. The Jews in the East used to carry such an amulet, written with a Hebrew verse from the Bible, and some of the Mohammedans with an Arabiç sentence from the Koran. A horsehoe is a perennial favorite as a bringer of success. Dr. James picked up a horseshoe on Westminster Bridge, and put it in his pocket; that same evening he made a profitable commercial arrangement concerning his famous fever powders, which he ever afterward attributed to the horseshoe.

FEARFUL OUTBREAK OF CHOLERA.—The *Times of India*, dated April 11, supplies the following terrible news: "Some cases of cholera among pilgrims in the city of Benares. In Oudh, a cholera panic prevails. Fearful accounts have been received from Cawnpore, Fyzabad, Jounpore, and Benares. The railway train turned out 18 corpses at Lucknow on the 8th. The Benares train, due at Lucknow on the night of the 8th, reached there on the morning of the 9th, having been delayed by frequent stoppages for the removal of the dead and dying. The grand Assoodhia Mela has been prohibited. In Lucknow, cholera cases are few, only eight deaths having taken place last week."

THE ALKALOID AND ACTIVE PRINCIPLE OF JABORANDI.—Mr. A. H. Gerrard, in a communication to the London *Pharmaceutical Journal*, announces that he has isolated an alkaloid in this new drug which he considers the active principle. He has given it the name of "*pilocarpine*." It can be obtained by the following process: "Prepare a soft extract either of leaf or bark with 50 per cent. alcohol. Digest this with water, filter and wash. Evaporate the filtrate to a soft extract, cautiously add ammonia in slight excess, shake well with chloroform, separate the chloroform solution and allow it to evaporate; the residue is the alkaloid pilocarpine, with probably a small amount of impurity. Besides the alkaloid, jaborandi contains an acrid acid, tannic acid, volatile oil, and chlorophyll. The acrid acid resin is soluble in ether, and possesses properties which indicate it to be the substance by which the effects of its external application are produced."

CAMPHOR.—The camphor of commerce is chiefly derived from the *camphora officinarum*, a tree of the laurel family, (*lauraceæ*,) that grows in China, Japan, Formosa and Cochin-China. It is obtained from the wood by distillation. The British Vice-Consul at Tamsuy and Kelung, in a late report, describes the process of distillation in that region as a hazardous trade, on account of the hostility of the aborigines, who resent the continual encroachments upon their territory for the purpose of cutting down the trees to extract the camphor. No young trees are planted to replace those destroyed, and at the present rate of diminution the supply of camphor will ere long be entirely exhausted. The stills used by the operatives in this region are of very simple pattern, and are built up in such a manner as to be easily removed as the Chinese advance into the interior. A long wooden trough, coated with clay and half filled with water, is placed over eight or ten furnaces; on the trough, boards pierced with holes are fitted, and on these boards are placed jars containing the camphor wood chips, the whole being surmounted by inverted earthenware pots, and the joints made air-tight by filling them up with hemp. When the furnaces are lit, the steam passes through the pierced boards, and, saturating the chips, causes the sublimated camphor to settle in crystals on the inside of the pots, from which it is scraped and afterwards refined. In summer, the camphor often loses as much as 20 per cent. on its way from the producing districts to the port of shipment.

BRIMSTONE.

PROFESSOR GESSNER'S VISIT TO THE SULPHUR BEDS OF THE ISLAND OF SABA—A RIVAL OF SICILY IN THE WEST INDIES.

Professor Gessner has been visiting Saba, and thinks that the sulphur beds there will rival those of Sicily. He writes thus:

St. Thomas, March 20, 1875.

My visit to the island of Saba, about 100 miles from here and one of the Windward Group, has been very interesting, and I hope that some account of it may prove so to your readers. The island is a volcanic cone, about two miles in diameter and some 3,000 feet in height at the peak. The principal town and seat of government is Leverock, situated 1,000 feet above the sea, in the bowl-shaped valley of the old crater. In this town I had my quarters for two weeks, making excursions from it to all parts of the island. There are a few cocoanut, banana and tamarind trees scattered about the town, which contains some 800 people, composed of a population of half whites and half blacks. The population of the whole island is about 2,000. My object in visiting this strange island, was the examination of the much-talked-of sulphur deposits. I lost no time after arrival in organizing a party to act as guides and assistants. My landlord, a very intelligent man and a water carrier, and some fine looking negroes, with picks and shovels, formed the party. My march began at six in the morning. The scene from my door in the Leverock was novel and grand. Just in front of me two lava peaks, part of the rim of the old crater, rose some seven hundred feet, like giants of antiquity. To the right and left the sea appeared through the wide fissures made by former eruptions. At the back the Peak of Saba, with the clouds whirling around it continually, rose 2,000 feet. Now and then these clouds would fall in rain over the little valley, the sun shining brightly all the time. There are no carriage roads in Saba, all the transportation being done by the negroes, who carry enormous loads upon their heads with great apparent ease. The paths are in some places very stony, and the climbing is sometimes very hazardous. Though I made many excursions in Saba, and saw evidences of the existence of brimstone during the most of them, I will describe one only, which may seem to give an idea of all.

The little yellow boy who acts as water carrier is at the door, his eyes dancing at the prospect of a day's picnicing and a silver half dollar; and when he is duly loaded with bread and butter, cold meats, a bottle of rum and one of water, all of which he carries in a basket neatly balanced upon his head, we depart. My landlord leads the way, I follow with the lightest of clothing and a sun umbrella, the miners come next and the yellow boy brings up the rear. Our way lies over St. John's Hill, which is 1,500 feet above the sea, with a small cluster of houses upon its top. From this point the view is grand—wonderful. Back of us, the Peak with its cloud cap rises into the sky; in front the sea, wide and endless, is only shut out by volcanic rocks, which rise in the shape of very short headlands, 1,600 and 1,700 feet. St. Eustatius, St. Kitts and Nevis seem close at hand over the deep blue water, and Montserrat may be seen on the horizon. Our path winds in and out among the rocks as we skirt the peak. Below us the surf on shore is a white line, to which the stony ridges descend. Just above is a village called Monticello, 1,800 feet above the sea. It is situated upon Booby Hill, under which is a small cave called the Webber Hole. Here the volcanic rock shows in grand cliffs, which stand out almost perpendicular to the shore.

As we passed through the Windward Side, Cornwell Henword, an English mining engineer, joined our party, and in his company I went along very pleasantly; he had been over the ground before and knew its character thoroughly. Our destination was Spring Bay, where the beds of sulphur-bearing gypsum show their greatest outcrop, and Great Hole which adjoins it. Not far from the Windward Side we turned into a deep valley, which begins at the peak and descends to the sea at Spring Bay, where it widens into a plateau half a mile in width. It is called Hell's Gate (probably because of the brimstone there), and the view of it as we turned the ridge was very striking. Up to this time we had seen nothing but gauva, sour sap and other scrub bushes along the path, but now had a glimpse of more luxuriant vegetation. Creeping plants of large size trailed over the rocks, and as the eye traveled up the gorge, masses of green were observed, which continued until they joined the girdle of mountain ferns around the peak. It was very pleasant to enter the shade of this picturesque valley. We rested a little at its deepest part and where it was almost perpendicular, then climbed to Hell's Gate Ridge, a very wild and rocky place, and then descended into Great Hole, near All-too-far Ridge, reaching a plateau about 300 feet above the sea, with a cap of volcanic rock 150 feet high resting upon it in the background. Just here, at a short distance from the shore, is a small island called Green Key, which looks as if it had been thrown down from the peak in times past. We went over the edge of the plateau, or seemed to do so, but really did no more than enter the various openings made in the sulphur bed, which extends along its face for half a mile. The men were engaged in removing the overburden, some eight feet of sand and gravel, when we arrived, and in breaking down the crude brimstone from the face of the bed, which is forty feet in thickness at this point and extends into the hill under the volcanic cap for an indefinite distance. Going toward Flat Point, which lies between Great Hole and Spring Bay, and descending the cliff a little, one can obtain a view of the vast bed of brimstone, which shows the yellow features in all the places where the overburden has been removed, and in weatherworn places stands out distinctly. We fill our pockets with crystals of sulphur, which line the crevices in the bed. At one place a fissure nearly two feet in width, lined with yellow crystal so far as we could see, was sounded with a line for forty feet. The mass of the bed is gypsum bearing sulphur to a greater or less degree, sixty per cent. being the average of sulphur. In many places masses of sulphur, quite pure and resembling brimstone poured into irregular moulds, could be had, hundreds of pounds in weight. The fires died out in Saba so long ago that the sulphur beds are perfectly cold, and no gases arise to interrupt the working of the sulphur quarry, the workmen carrying on their operations as easily as if in a bank of stiff clay. We trace the bed to Flat Point and agree as to what Spring Bay will show when its outcrops have been explored with pick and shovel. We discuss the shipping facilities and agree that a wire tramway from the edge of the quarry to Green Key will be the way to do the transportation to the lighters.

It is a hard climb to Hell's Gate Ridge again; but we manage it, and after a resting spell at one of the houses by the way, and with a view seaward that would stir the heart of a graven image, we trudge slowly home through the Windward Side and around the peak, the shadow of the hills westward of our home in the crater town reaching across it as we descend St. John's Hill for rest and dinner. Sitting out on the edge of the cistern in the evening, smoking and thinking it all over, I feel well repaid for the tramp and for the voyage from home, for I have seen what I believe to be one of the largest and certainly the richest and most accessible deposits of brimstone in the world, and, my profession being of a diabolical nature, I am pleased accordingly.—*Oil, Paint & Drug Reporter.*

WHAT IS CINCHO-QUININE?

BY ALBERT E. EBERT, CHICAGO.

This query having been referred to me for answer by the Association, I have the honor of submitting the following:

"Cincho-Quinine." Although the history of this nostrum may not be very instructive, it may, nevertheless, be interesting. It first made its appearance in 1869, shortly after the debut of "sweet quinine," and its originator, like that of "sweet quinine," was a member of this Association; but he lacked the moral stamina of Mr. Stearns, and chose rather to resign his membership than to stand a trial under the code of ethics of this Association, his very lame excuse for resignation being *inability to attend the annual meeting.* This action on his part was not regretted by the Association, as it relieved it from the unpleasant duty of expelling him.

At the time of its first introduction, the manufacturers of "chincho-quinine" published a statement that its chemical composition was: 1, Quinine; 2, Cinchonia; 3, Quinidia; 4, Cinchonidin; 5, Other alkaloidal principles present in the barks.

In March, 1870, Mr. W. T. Wenzell, of San Francisco, California, a member of this Association, read a paper before the California Pharmaceutical Society, in which he gave the result of a chemical investigation he had made of this nostrum, and in summing up, he says: "In reviewing the experiments and results, in connection with James R. Nichols & Co.'s circular, we unhesitatingly arrive at the following conclusions:

'Cincho-quinine,' although having the advantage of being nearly tasteless, does not contain quinia, quinidin and cinchonidin, and therefore does not represent the whole of the active principles of the bark. It can not exert the full effects of sulphate of quinia in the same dose, inasmuch as the stated dose of 'cincho-quinine' is from five to thirty grains. Although 'cincho-quinine' appears to cost less than sulphate of quinia, it does not follow that commercial 'cinchonia,' sold at four times its value, is a desirable substitute for quinine in an economical point of view."

It was generally supposed that this exposure of the composition of "cincho-quinine," which showed it to be an imposition, would have the desired effect upon the members of the medical profession, so that its use by them would be discontinued. But in this we were disappointed, for we had not taken into consideration the cunning and shrewdness of its proprietors, who were well aware of the power of printers' ink, and at once set to work to muzzle the medical press of this country. This they accomplished, with but few honorable exceptions, by promises of extensive advertising patronage, and thus the publication of Mr. Wenzell's article was limited to the then few existing pharmacal and the few medical journals who could not be bought by their promises. Having so well succeeded in preventing the general publication of the article, and appreciating the well known maxim that the only way to sell nostrums is to advertise them, they at once set about it, in a systematic manner, by padding the medical press with laudation of the medical properties of "cincho-quinine," and its superiority in this respect over quinine. The only effect Mr. Wenzell's examination seemed to have upon the manufacturers of the nostrum was to change their statement of its composition, which was *now* claimed to be "a combination of the different alkaloidal principles of Peruvian bark presented in their native alkaloidal condition. The alkaloid cinchonia *predominates;* next in amount is quinia; then quinidin, and then follow all the other of the medicinal principles found in the barks." *

As time wore on, the proprietors of this nostrum became more bold, and required each medical journal whom they favored with a page of advertisement to give the article an editorial "puff," or an indorsement, by reprinting, *as selected matter*, in the respective medical publications, a communication of several pages in length, extolling the virtues of this nostrum, which essay had appeared in an advertising sheet, published by this firm, the *Boston Journal of Chemistry*. The prostitution of the medical press for such dishonorable purposes was very properly called attention to by an editorial upon the subject in the *Medical Record* of New York City. This had an effect of checking the evil, but the lull was of short duration, for the sagacity of the projectors of the nostrum had as yet not been exhausted. The next step was the securing of medical testimony regarding its miraculous virtues: this was probably furnished by some medical *hireling*, who possessed some smattering of the science of medicine, or it was manufactured out of whole cloth at the "laboratory."

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* Since the publication of this paper, the manufacturers of the nostrum have found it again necessary to change the statement of its composition; and now they lay special stress upon its containing quinidia. "In no other form are combined the important alkaloidal principles of bark, so as to be accessible to medical gentlemen. In it is found quinidia, which is believed to be a better anti-periodic than quinia." What next?—EDITOR PHARMACIST.

This testimony appeared as an original contribution to medical science, extolling in the most forcible language the superiority of "cincho-quinine" in combatting disease wherever quinine is indicated, and this "paid puff" is at present going the rounds of the medical press on the terms mentioned above, or to repeat substantially the wording of the "bait" held out to the medical press, *If you insert among the reading matter of your journal this article, we will give you a page of advertisement for your publication.*

In an "editorial" of the August number of the PHARMACIST we again called the attention of the medical press to the *evil* of inserting this communication, which was but an advertising dodge of this house for furthering the use of the nostrum. For this honorable intention upon our part we have been rewarded by the following editorial remarks, which we extract from the Nashville *Journal of Medicine and Surgery*, the senior editor of which is William K. Bowling, M. D., President of the American Medical Association: "In common with nearly all the medical journals of the country, we admitted into our advertising columns the advertisement of 'cincho-quinine' from the house of Billings, Clapp & Co., of Boston, who are eminent practical chemists, and are the proprietors of the *Boston Journal of Chemistry*. 'Cincho-quinine' is a white, tasteless preparation, said to contain all the alkaloids of the cinchona bark, as quinia, cinchonia, quinidin, etc., but probably devoid of quinia.—Dunglison. We always thought it was the legitimate business of the chemist to extract the alkaloids from crude substances, for the use of physicians, until otherwise informed by the Chicago PHARMACIST. We have been advertising and using the various alkaloids thus extracted for years, without being aware that we were aiding and abetting nostrum-mongers. 'Cincho-quinine' is, in no sense of the word, a quack medicine. It is a legitimate product of one of our most valuable medicines, Peruvian bark, obtained by legitimate chemical process, and is no more a quack medicine than is quinine, cinchonia, etc. It sells for about one-half the price of quinine, and possesses about the same value as that article in controlling intermittent fevers, according to the statements of those who have used it. This was a desideratum which had been sought since the introduction of quinia. Physicians living in malarious countries generally have to supply the medicine to the sick, whether they get any thing for it or not; so that an article possessing about the same power to control malarial fevers, at half the price of the usual remedy, was, indeed, an object."

To this effusion of wisdom(?) coming from one who pretends to know, *and he should know*, for he is a teacher of the science of medicine, we have no further comments to make, for it tells its own story too well, and we will bring the history of 'cincho-quinine' to a close.

Regarding the chemical composition of "cincho-quinine," as at present found in the market, we have subjected seven samples of this nostrum to a chemical and chemico-microscopical examination. Some of these samples were obtained direct from the manufacturer, others original bottles of the market, and the balance from dispensing stores where it was kept on hand. In every case the examination for quinia, and its separation from the alkaloid cinchonia, was carefully made, following closely the processes and tests as laid down by the best modern authorities, but not in one instance have we been able to discover a trace of quinia.* When Stoddart's chemico-microscopical test for the alkaloids of cinchonia, with a magnifying power of three hundred and sixty diameters, was employed, the field presented only the alkaloid cinchonia, without the presence of any other alkaloid of the cinchonia bark.

All the chemical tests made yielded the same result, and, therefore, fully indorse the former statement of Mr. Wenzell, saying that "cincho-quinine" is the alkaloid cinchonia, and not an alkaloidal representation of cinchonia bark. Therefore, if the medical testimony regarding the medicinal virtues of "cincho-quinine" are correct, it will become the medical press, at once, to call attention to the use of the alkaloidal cinchonia, which can be furnished by the manufacturers of sulphate of quinine at one-fifth the cost as at present furnished by the proprietors of "cincho-quinine," who put it up under this improper name.

Therefore, in answer to the query, What is "cincho-quinine?" we will state that our experiments determined it to be simply the alkaloid cinchonia, which has been precipitated from sulphate of cinchonia by means of some alkali or alkaline carbonate, washed and dried between cloths, with pressure, thereby producing it in the form of scales.—*Proceedings American Pharmaceutical Association*, 1874.

CINCHO-QUININE.

BOSTON, APRIL 15, 1875.

Editor American Journal of Pharmacy:

DEAR SIR: Our attention having been called to a communication by Messrs. E. Scheffer and C. L. Diehl, in the April number of the "American Journal of Pharmacy," purporting to be a chemical examination of cincho-quinine, we desire to remark briefly as follows:

The agent was introduced to the profession in 1869, since which no change whatever has been made in its composition. During this period it has been examined by four pharmacists: 1st, by Mr. W. T. Wenzell, of San Francisco, in 1870; 2d, by A. E. Ebert, of Chicago, in 1874; and lastly, by Messrs. E. Scheffer and C. L. Diehl, of Louisville.

The result of Mr. Wenzell's analysis was the discovery of two substances or principles which the agent did not contain, and he failed to discover quinia, quinidia or cinchonidia. Mr. Ebert was able to discover only cinchonia, failing utterly to find quinia, quinidia or cinchonidia. Messrs. Scheffer and Diehl find quinia, quinidia and cinchonia; and they remark (page 159) that "if it contains cinchonidia, it can be present only in small quantities, and they did not search for it."

The widely different conclusions reached in the qualitative examinations made by these gentlemen must lead the reader to conclude with us that, when an agent is made up of such complex and delicate organic principles as are found in barks, and the tests and reactions involve deceptive color-tints or forms of crystals with such varying solubility, and when these tests are so frequently fallacious and unreliable, the pharmacist and the chemist should be careful in expressing positive opinion respecting the results of their investigations when they differ from the statements of the manufacturer, who certainly has the most reliable knowledge upon the subject.

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* Additional quantitative examinations of the nostrum "cincho-quinine" for QUINIA, since the exposure of its composition at the twenty-second annual meeting of the American Pharmaceutical Association, held in Louisville, Ky., September, 1874:

No. 1, examined by Wm. T. Wenzell, San Francisco, yielded 2.175 per cent. of quinia.
" 2, " " Albert E. Ebert, Chicago, " 1.250 " "
" 3, " " " " " " " 1.875 " "
" 4, " " L. C. Hogan, " " 1.200 " "
" 5, " " " " " " " .900 " "

These samples of cincho-quinine, as far as could be ascertained from the United States proprietary stamps attached to the packages of the nostrum, were placed upon the market during the year 1874.

Two samples (*old* J. R. N. & Co.) examined by Dr. I. Walz, analytical chemist, of New York City, are reported by him to have given no reaction for *quinia*. Mr. Wenzell also reports the absence of *quinidia* in the specimen No. 1 examined. Specimens Nos. 2, 3, 4 and 5 all contained sulphuric acid and sulphates in varying proportions.—EDITOR PHARMACIST.

As manufacturers of the article, we unhesitatingly say, that never has a phial of the agent left our laboratory constituted in correspondence with the quantitative results reached by the Louisville gentlemen; and in saying this, we distinctly disclaim any purpose of charging them with intentional false statements.

In our circulars we have stated cincho-quinine to be the bark alkaloids of quinia, cinchonia, quinidia, cinchonidia, and other alkaloidal principles present in Peruvian barks, and it contains no substances but those naturally existing in bark. By this, we wish to be understood as stating that cincho-quinine is a new method of presenting the bark alkaloids, and is unlike any other product which may be substituted by physicians for sulphate of quinine.

In conclusion, we are convinced that no more certain proof of the remedial value of cincho-quinine could be given than its growing popularity with the medical profession, and the attention given to it by the pharmacists of the country; and while their published analyses, both qualitative and quantitative, differ widely from each other, *and all are incorrect,* it is yet a source of satisfaction to us that the more exhaustive their labors the more nearly do they approach to our statements regarding its nature and value.

BILLINGS, CLAPP & CO.

EDITORIAL REMARKS ON THE ABOVE COMMUNICATION.

The drift of this communication appears to be to throw doubt upon the correctness of the results obtained by Professors Scheffer and Diehl, for no other reason than that *the tests and reactions* (of such complex and delicate organic principles) *involve deceptive color-tints or forms of crystals with such varying solubility.* Referring to the analysis as published in the April number,* it will be observed that the color reactions of the cinchona alkaloids have not been used for their *quantitative determination.* The objection as to the varying solubility is, therefore, the only one, *a priori,* admissible in this case. Scheffer and Diehl treated the recently obtained precipitates from two grams each of three samples of cincho-quinine with 1½ fluidounce of stronger ether, spec. grav. ·728, consequently weighing 497 grains=32 grams. The amount of alkaloids taken up by the ether is regarded as representing the alkaloids quinia, quinidia and cinchonidia, all of which are soluble in from 20 to 80 parts by weight of ether. In no case was the residue larger than ·100 grams, while the above amount of ether is capable to dissolve ·400 grams of the *least soluble* of the three alkaloids (cinchonidia). It was, therefore, employed in more than sufficient quantity to dissolve *all* of the three alkaloids present in the two grams of cincho-quinine.

The solubility of the alkaloid cinchonia in ether is given by modern authorities as 1 in about 400; some older authorities give 600, and one, Bussy and Guibourt, even 830 parts of ether. Calculating upon the latter figure (without admitting its correctness), the 32 grams of ether employed in each case would have dissolved ·038 grams of cinchonia, which should be deducted from the (in ether) soluble alkaloids; the remaining weight would represent the correct total amount of quinia, quinidia and cinchonidia. 0·038 is equal to 1·9 per cent. of 2 grams; the correct percent-

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*The reader will please correct, on page 157, line 16 from top, the words "had it *contained* of B alone" to had it *consisted* of B alone; on page 158, line 1, the word "*cinchonia*" should be *cinchonin.*

age of the three alkaloids named would, according to this calculation, be, for sample No. 1, = 3·00; for No. 3, = 2·15, and for No. 4, = 3·10 per cent. In examining sample No. 2, four fluidounces of ether were used, which are capable to dissolve ·089 grams of cinchonia, and, if calculated for the total amount of precipitate and the 5 grams of cincho-quinine, the actual percentage of the three alkaloids named above, would be reduced to 3·25. These corrected figures agree with the amount of alkaloids soluble in ether determined by Mr. Wenzell in 1870, which is 2·5 per cent. Wenzell does not give the amount of ether employed by him, and we are, therefore, left to infer from the above that he may have used a much smaller quantity. Although he failed to recognize the three alkaloids, his results may be taken to corroborate those of Scheffer and Diehl. Mr. Ebert has not published the process by which he examined cincho-quinine; his results can not, therefore, be compared with the quantitative analyses referred to above.

While we readily grant that the solubility of the cinchona alkaloids in ether is influenced by various circumstances. The investigations of Pasteur, Van Heijningen, De Vrij, O. Hesse, J. E. Howard and others, prove that Scheffer and Diehl have used a much larger quantity of this solvent than was actually necessary in this case, and, as applied, these tests can not, therefore, be regarded as *fallacious* and *unreliable*, or the quantitative determinations to be *incorrect*, except in so far as *they have credited the samples of cincho-quinine with a larger percentage of the three alkaloids than is actually contained therein;* and this is the only light in which we can view the assertion of the manufacturers, that they have never sent out this article constituted as determined by Scheffer and Diehl. If, however, the words "fallacious and unreliable" are intended to convey the idea that a larger proportion of the salts of the three alkaloids is used in the *manufacture* of cincho-quinine, we can reconcile this fact very well with the analytical results of the commercial article, and more particularly with the evident variation of its composition. The considerable amount of sulphuric acid, 4·8 per cent, determined in one sample, makes it evident that the article is made by mixing the sulphates of the cinchona alkaloids in a certain proportion, decomposing them with ammonia and either expressing or washing the precipitate with water to remove the mother liquor. The most valuable cinchona alkaloids being somewhat soluble in water, and much more freely in ammonia, it is very evident that, with slight variations in the strength of the ammonia or in the temperature of the water, the amount of these alkaloids left in the precipitate must vary. And since the washing is evidently cautiously performed (cincho-quinine still contains a little ammonium sulphate), it seems even probable that different portions of the same lot may vary in composition, the outer layers where the water evaporates necessarily containing a somewhat larger amount of quinia and quinidia.

Regarding the remedial value of cincho-quinine, we do not know that that has been questioned; but the possibility of its being equal to quinia in therapeutical effects has been denied, and, from its composition, it is evident that its apparent cheapness, as compared with the price of quinia only, becomes the reverse as compared with the price of cinchonia. The medical commission appointed by the Madras Government, in 1866, to test the relative value of the cinchona alkaloids, treated 2,472 cases of paroxysmal malarial fevers, and reported the number of failures for every 1,000 cases treated with quinidia to be 6; with quinia, 7; with cinchonidia, 10, and with cinchonia, 23. On the other hand, however, they reported the remedial value in doses of the same weight to be as follows: 3 doses of quinia to be equal in effect to 5 doses of quinidia, to 7 doses of cinchonidia, and to 7 doses of cinchonia. We have not been able to find the record of any experiments made with the mixed alkaloids, and while it is possible it may be regarded as improbable that the combination of cinchonia with the more valuable alkaloids should increase its efficacy to a greater extent than must be ascribed to the latter.

From these considerations we are forced to the conclusion that cinchoquinine is an arbitrary mixture of the four cinchona alkaloids, and that its therapeutical value is fully represented by mixing an equivalent weight of sulphate of cinchonia with about 2 per cent. each of the sulphates of quinia, quinidia and cinchonidia. If, now, through this controversy, the attention of the medical profession shall have been directed more prominently than heretofore to the value of the cheaper cinchona alkaloids, we shall acknowledge with pleasure that a real benefit has been conferred thereby upon those who need those alkaloids either as tonics or antiperiodics.—*American Journal of Pharmacy.*

WHITE SHELLAC.

The following are the best processes for bleaching shellac:

The lac is first dissolved in spirits of wine; add bonedust in sufficient quantity to make a thin paste, the bonedust being finely ground. Allow the mixture to stand in direct sunlight for several days, being shaken up often. When it is bleached sufficiently, filter it until fine.

Another method to bleach shellac: proceed as follows:

Dissolve the shellac to be bleached in strong spirits of wine, and to the solution add sufficient bonedust to make a thin paste. The bonedust must be very finely ground. The mixture is allowed to stand for several days exposed to the full action of direct sunlight; during this period it is repeatedly shaken, so that every particle is brought into motion. When the shellac is sufficiently bleached, the liquid portion is filtered off through common filtering paper into a bottle.

THE NINTH ANNUAL COMMENCEMENT of the Massachusetts College of Pharmacy, was held at Parker Memorial Hall, Thursday evening, May 20, 1875. Graduating class, with subjects of their theses: Charles Henry Congdon, Solubility of Camphor in Water; Edward Everett Babb, Uva Ursi; William Carley Durkee, Tincture and Solution of Chloride of Iron; Frank Warren Hay, Iodide of Potassium; Ernest Clifton Marshall, Glycerin; Joseph Benedict Fenelon, Cannabis Indica. The prize of the association of the alumni to the student having the highest standing in all the departments at the annual examination, was awarded to Charles Henry Congdon.

CORRESPONDENCE.

EDITOR OF THE PHARMACIST:

The firm of Billings, Clapp & Co., who claim an honorary succession to the untarnished reputation of the prince of chemists (?), J. R. Nichols, of Boston, Mass., have lately availed themselves of the opportunity to call attention to the false (?) representation made by a "Chicago druggist" regarding the chemical composition of the (to them) invaluable nostrum, "cincho-quinine." It is beyond all reasonable supposition that such an individual—"a druggist," and a Chicago one at that—should assume to be familiar with Peruvian Bark and its alkaloidal composition, as it is a well known fact that such knowledge is, or should be, at least, foreign to his vocation. Therefore, it is a case of gross impudence on the part of "*a druggist*" to dare to question the composition and purity of the "nostrums" produced by a house who have for the last eighteen years earned a reputation which has (so says the report) provided each member of the firm with an independent fortune, of such magnitude that it has become necessary to utilize some of the superabundance of "filthy lucre" in farming. Therefore, the profession at large should, in the most unqualified terms, denounce this unpardonable outrage committed by "a druggist" upon a house of this honorable character, who have for so many years earnestly battled with the prevailing ignorance of the profession, and to whom they have in vain attempted to demonstrate the absurdity of the present nomenclature of chemical science, it being at variance with the productions of their "factory," and therefore erroneous. A laboratory established on such broad and elevated principles, and under the supervising agency of a *political* State Assayer of the "Old Bay State," who never allows an opportunity to pass by for practically testing the quality of the adulterated liquors which are so very prevalent at the "hub;" and also is constantly on the alert to attach his qualification as a chemist to any testimonials of any nostrum, provided there is money in it, as otherwise, if he neglected to do so, he would not be (SHARP)—(LESS) some one else should do it and pocket the money. Therefore, taking all in all, it is demonstrated most conclusively that the chemistry this house deals in can not be at fault; and when a preparation which this firm concocts, and sells under the name of "citrate of magnesia," is found, on chemical examination, to be composed of *tartaric acid, bicarbonate of soda and epsom salts*, it bears the same *relation to truth* as "cincho-quinine" does to an alkaloidal representation of Peruvian Bark, therefore, who dares question the truthfulness of the statement of this firm.

It is not to be wondered at, that, after the gross misrepresentation to which this firm was subjected, by the examination of their pet "cincho" by the "Chicago druggist," and whose paper was to appear in the annual proceedings of the American Pharmaceutical Association, they initiated the necessary legal steps to prevent the publication of the annual volume. Yet, with that generosity which has always characterized the doings of this house towards a professional body (?), they waived serving the threatened injunction against the issue, if they were permitted to insert in the volume a card, in which they could contradict the statement of the examination. This was granted, and the members of the American Pharmaceutical Association received the proceedings complete, with an appendix containing the card of the firm, which to many readers must have appeared rather "thin." Thus ended the irrepressible conflict with the Association, and all was serene once more, excepting the behavior of the principal mischief-maker, "whose morals had become so thoroughly perverted" by the examination of the nostrum that no amount of "bluffing," in the way of threats with legal prosecution, would frighten this "irresponsible druggist" to a retraction of what he had stated in the paper.

Now, Mr. Editor, I have taken the great pains of writing you, in detail, a full account of the many wrongs and the great injustice committed against this honorable house, and I hope that you may use the influence of your valuable journal to have justice done them, by advocating in the pages of your publication the expulsion from membership in the American Pharmaceutical Association of this meddlesome "Chicago druggist;" and if you do this faithfully, I have no doubt that you will be handsomely rewarded by the "*nostrum ring,*" said to have been formed for offensive and defensive purposes. Such people are in the habit of paying well for all dirty work done by willing tools and hirelings. Hoping you will take due notice and govern yourself accordingly,

I remain faithfully, "CLAP-TRAP,"
Of the firm of Josh Billings, Clap-trap & Co., manufacturers of patent humbugs, dealers in nostrums and second-hand chemical and pharmacal ware, etc., etc.

From a correspondent we clip the following:

"Thanks for the exposure of the old fraud, 'cincho-quinine.' The reason why the medical press continue to advertise the nostrum is due to the fact that they see too much money in it.

"Yours truly, S.
"PHILADELPHIA."

EDITORIAL.

The extended use made by regular physicians of the proprietary medicines so freely advertised in medical journals at the present time, and the excitement recently caused in medical circles by the exposure of several of the more notable as base frauds, calls for something more than a passing notice, not to say censure, of those who have so far abandoned the regular and ethical practice of medicine as to prescribe such agencies in the treatment of diseases. It may seem strange to the thoughtful physician that any graduate in medicine will use an advertised nostrum, when he has the range of all remedies known in the pharmacopœia from which to select; but, strange as it may seem, no articles are more largely used by so-called physicians than the various compounds advertised in a certain class of medical journals, which depend for their support upon this class of advertising, rather than upon the collection of subscriptions.

We think such journals, whether medical or pharmaceutical, ought to be discountenanced by the profession, and the evil pointed out to the unwary of allowing such literature (?) a reading. "Touch not, taste not, handle not," should be the motto of every physician when appealed to by traveling agents to favor the use of such secret compounds, which all may know are bottled *only* because "there is money in it." A better education of physicians would, no doubt, cure the trouble; but the present race of physicians, with a few honorable exceptions, are not well enough informed to avoid being imposed upon by these sharpers, aided by medical journals.

The editor has hitherto wholly refrained from alluding to his own experience in his efforts to place before the public the results of examinations of sundry articles, which, for want of a better name, have been called *nostrums*. Naturally, he has selected those which were being largely advertised in the medical journals, and for this reason were likely to be first used by physicians, under the impression that no quackery would find its way into the sanctum of medical editors. Suffice it to say, that, with each publication exposing the worthless character of these nostrums, we have been met with threats of legal pains and penalties for libel gross and malice prepense. Hurling the terrors of the law at the editor's pocket-book was supposed to be all that was necessary to bring retraction and humility. Our readers may know how far threats have effected the purpose in view. While we have no quarrel with *makers* of nostrums, we have a most deadly hatred of their productions, whether gilded with the livery of scientific names or more truthfully called *patent medicine*. We trust that degree of civilization may be reached, by and by, which shall provide for official examination of all articles of food or medicine, and require that the name of each compound or simple shall be truthfully given on the label, and adequate punishment be provided for all deception. The official examination ought not to be in the power of any one man, as a State Assayer, which is usually only another name for a political office-holder; but should be so made as to remove it from the possible chance of bribery or incompetency—two evils which the public now suffer from to an alarming extent, supplementing, as they do, the cunning knavery of the dishonest manufacturer of medicines, baking powders, confectionery, liquors, and many other articles of daily consumption, than which there is no baser use of knowledge or power. We hope yet to see the penitentiary become the home of many who might profitably do the State some service, to partly compensate for the evil of their lives.

To illustrate how the nostrum "cincho-quinine" is looked upon *at its home*, we publish the following editorial from the May number of *The Laboratory*, (Boston,) edited by Prof. James F. Babcock, which our readers will agree with us has *the true, honest ring in it:*

"PHARMACEUTICAL HONESTY.

"If there be one class of dealings more than another in regard to which the public have a right to demand the most conscientious treatment, it is in those where pharmaceutical preparations are involved.

"A misrepresentation concerning the quality or weight of any article of ordinary merchandise affects only the pocket of the customer; but a falsehood, expressed or implied in regard to a product intended for use as a medicine, has a more important influence, inasmuch as it *may* affect the health or even the life of the individual who may be deceived.

"Strangely enough, the laws of the land, which demand the strictest commercial integrity in ordinary business transactions, are not broad enough to reach those who trade upon the ignorance or credulity of physicians or their patients.

"He who sells a pound of sugar, using false weights, may be punished by the law; but he who makes a tincture of chloride of iron, for example, *knowing* it to be deficient in alcoholic strength, or containing less iron than the usual amount, not only goes unpunished, but may build up a prosperous business, from which he may eventually retire with profits which his more scrupulous competitors are unable to realize.

"What matters it to such a dealer if his citrate of iron and quinia contains only three per cent. of quinia instead of seventeen—so long as it is not labeled U. S. P., although the customer expects such an article and believes he is getting it?

"There is no *legal* fraud in the sale of such a preparation; yet who can doubt the *moral* guilt of any manufacturer who thus cheats those whose condition requires a medicine of proper strength and of definite composition.

"Of a similar nature are a class of frauds which some manufacturers find profitable, viz., those which, for want of a better title, we may call *pseudo-chemical preparations.*

"For example, a mixture of say an ounce of 'chloride of lime' with a few grains of salicylic acid becomes a pseudo-chemical preparation, if it be called by a high-sounding title, as CHLORO-SALICYL, and advertised as an 'antiseptic disinfectant, costing but little more than *half* the price of salicylic acid, but producing the valuable effects of this new product.'

"No one could doubt but that such a mixture would be useful as a disinfectant, but this would make it none the less a fraud if the representations made concerning it were so skillfully worded that while they told the truth they were *calculated to deceive.*

"Analysis might give 'decided tests for salicylic acid,' but this fact would not establish the fairness or truthfulness of a manufacturer who would thus sell 'chloride of lime' for ten times its cost.

"Some exposures of certain pseudo-chemical preparations have lately been made; and we do not hesitate to say that such 'tricks' deserve the severest condemnation. It is a shame that advertising favors can muzzle the mouths of certain medical and pharmaceutical journals, whose business it is to protect the public, and maintain at any cost the standard of pharmaceutical honesty."

"When shall we three meet again?"

"R. Rother, of Detroit; Charles G. Polk, M. D., of Philadelphia, and Oscar Oldberg, Phar. D., of Washington, D. C., have been elected honorary members of the Tennessee Pharmaceutical Association."—*The Pharmacal Gazette.*

The individuals of this pharmacal "*kleeblatt*" are best known by their respective *noms de plume*, "**" and "Pill-roller," "Eurebus," and "Phar. D." The first two geniuses have faithfully filled the pages of the "Nostrum Advocate" with their theoretical scribbling, and the third furnished a title, *which, by hard begging*, was finally obtained by the managing editor of the *Pharmacal Gazette*, with the view of adding extra embellishment to his illustrious name.

It is a well known fact that theory without practice is like a ship without a rudder; and as we, being disinterested lookers-on, notice that, in the above bestowal of honorary titles, practical qualities have been altogether ignored, we therefore "hint" to the manager of the *menage*, that, to complete the circle of the happy family, he introduce therein the three brilliant meteors of renowned scientific nostrums of the period, "sweet quinine," "cincho-quinine" and "elixir iodo-bromide of calcium comp"

"*There's millions in it*," aside from the glory of being proprietor and sole manager of such an extraordinary combination.

REVIEWS AND BOOK NOTICES.

Eleventh Annual Report of the Alumni Association of the Philadelphia College of Pharmacy. Philadephia, 1875.

The annual report of this live society is, as usual, replete with interesting matter, not only to the members of the association, but to every member of the profession Among its contents is an able introductory address by Prof. Joseph P. Remington; a valedictory address by Prof. John M. Maisch; and the annual address delivered before this association by one of its alumni, Lawrence Turnbull, Ph.G., M. D. Then follows the report of the annual reception of the graduating class, report of the alumni delegation to the 22nd annual meeting of the American Pharmaceutical Association, the President's annual report, commencement exercises, minutes of the eleventh annual meeting, minutes of the executive board, constitution, by-laws, etc.

The objects of this association are the advancement of the profession, the perpetuation of the pleasant associations formed during the collegiate course, and to maintain an interest in the college.

Year-Book of Pharmacy: comprising abstracts of papers relating to Pharmacy, Materia Medica and Chemistry, contributed to British and Foreign Journals, from July 1, 1873, to June 30th, 1874; with the Transactions of the British Pharmaceutical Conference at the Eleventh Annual Meeting, held at London, August, 1874.

The publication of the present volume was delayed by the illness of the editor, and received so recently that we can not do the book justice. It is uniform with preceding volumes, and will be welcomed by every pharmacist who makes a point of keeping up with the pharmaceutical literature of the day. . It may be obtained from Prof. Attfield, 17 Bloomsbury Square, London, England.

Every graduate is enrolled as a member, but to provide funds to accomplish its objects, a certificate of membership is issued to such as pay into the treasury the sum of $5.00, and it is hoped that all who have as yet not identified themselves will respond to this appeal.

There is an *album* which it is designed shall contain the faces of *all old friends* and fellow-students. All graduates of the college who have not sent their card photograph are invited to do so. The importance of this becomes apparent upon considerations of the difficulty of a so large and widely scattered membership meeting together.

Druggists wishing a copy will send their address to the Secretary, Allen Shryock, Broad and Parrish streets, Philadelphia.

Annual Report of the College of Pharmacy of the City of New York, and Fourth Annual Report of the Alumni Association of the College of Pharmacy of the City of New York.

The volume contains President Balluff's excellent annual address; reports of committees and other officers of the college; the second annual report of the board of pharmacy of the city and county of New York; the commencement exercises, with the valedictory addresses. It is replete with interesting matter, and will be perused with pleasure by all who have the good cause of pharmacy at heart.

We are in receipt of a pamphlet on the TARIFF REVISION, by Daniel C. Robbins, Esq. By the recent removal of Commissioner Douglas from the head of the internal revenue department, we anticipate smoother sailing for the future. Every body has become tired and disgusted at his rulings, which have been of such a character "that no fellah can find out," and there is but little interest left to pursue the pro and con. of this vexed question. Therefore, should Commissioner PRATT prove a MOSES, to lead us out of the wilderness, we will rejoice; otherwise, we pray, "let us have peace," or let Daniel have a hand in it.

The Histology and Histo-chemistry of Man. A treatise on the elements of composition and structure of the human body. By Heinrich Frey, Professor of Medicine, in Zurich. Translated from the fourth German edition by Arthur E. J. Baker, Surgeon to the City of Dublin Hospital, Demonstrator of Anatomy, Royal College of Surgeons, Ireland, etc., etc. New York: D. Appleton & Co. 1875. For sale by Jansen, McClurg & Co., Chicago. 1 vol., 684 pp. Illustrated with 608 engravings on wood.

The medical profession, as well as the general scientific student, is indebted to the publishers for this American reprint of this really valuable work on the science of pathological histology.

Ichthyosis of the Tongue and Vulva. By Robert F. Weir, M. D., Surgeon to Roosevelt Hospital, etc. New York: D. Appleton and Company. 1875.

THE PHARMACIST.

VOL. VIII. CHICAGO, JULY, 1875. NO. 7.

WHAT IS "QUININE BRUTE?"

BY L. C. HOGAN.

This query was propounded to the editor of THE PHARMACIST, and answered by him in THE PHARMACIST for December, 1874. Since that the question has been put to me several times, and as I have taken considerable trouble to look up the subject, I will lay the results of my researches before the readers of THE PHARMACIST.

Quinine brute is a French preparation. The word BRUTE is French, signifying *crude:* hence, quinine brute is crude quinia.

Trouseau was the first to use it. I will give an extract from his Therapeutics, edition 1856:

"Quinine brute does not materially differ from precipitated sulphate of quinia, except containing coloring and extractive matter. It is an active febrifuge, and more active than the sulphate of quinia—this is the experience of myself and others. It is nearly tasteless—due to its resinous character—and can be easily softened between the fingers, rolled into pills, and given in this form to children."

It is prepared by following the process as laid down in the Pharmacopœia for sulphate of quinia, leaving off when it says "distil off the alcohol till a brown viscid mass remains"—this mass is "quinine brute" or crude quinine. It contains quinia, coloring and extractive matter, and more or less of the other alkaloids. Can the pharmacist manufacture this and make it pay? *No!* One pharmacist in this city tried it; he placed the cost at $2.00 per ounce, and his production was principally *brute;* and, I understand, he has given up the manufacture of the article.

If physicians must have a preparation of bark containing quinia and other alkaloids in combination with resin, let us see if we can not find something among the numerous preparations already extant that will fill the bill, instead of adding another to the long list. We will, if we thus continue, have cinchona as nearly worked to death as we have iron.

Let us look at the claims of PURIFIED CHINOIDINE for this position. I will first give a short history of the article. As in the manufacture of sugar, so in the manufacture of quinine, there is always a portion so combined with resinous proximate principles as to be uncrystallizable. This amorphous residue was first called extract of quinine. It was first prescribed by Dr. Emlen (about 1823 or '4) in doses of two grains, with entire success. Drs. Wood and Parrish next tried it, with the same result. This principle has been the subject of much scientific investigation in Europe. About the first was by Sertürner, in 1829. He announced the discovery of a new alkaloid, which he called *chinoidine*, and he regarded it as a more valuable antifebrile than quinia.

His conclusions were invalidated by the experiments of MM. Henry and Delondre, which went to prove that the alkaline matter contained in it consisted of quinia and cinchonia, obscured with a yellowish substance which interfered with their crystallization.

In 1830 it was adopted by the U. S. P. under the name of impure sulphate of quinia, and was discarded in 1840.

In 1847 Dr. F. L. Winckler found it to contain an uncrystallizable alkaline principle, having the same combining weight as quinia, and differing from that alkaloid only in the want of the property of crystallization and forming salts with the acids. (Pharm. Cent. Blatt, May, 1847, p. 310.)

Roder, in 1848, says that it is ordinary quinia combined with a resin.

Next comes Leibig; he says its composition is identical with quinia, and styled it amorphous quinia.

Van Heijnigen (1850) resolved it into quinia, cinchonia, quinidia and a resinous substance.

Pasteur found quinoidine (chinoidine) to consist of two alkaloids, derivatives from quinine and cinchonia, with which they are respectively isomeric, though differing in being uncrystallizable, and named, in view of their origin, quinicia and cinchonicia. He found that quinia and cinchonia were converted into their derivatives by heat; therefore they are products rather than educts, and result from the processes employed in extracting the other alkaloids from bark. They are both nearly insoluble in water, very soluble in alcohol, and uncrystallizable.

As to the efficacy of chinoidine, I will give a short extract from a paper "On Quinoidine in the Treatment of Intermittent Fever," by J. DaCosta, M. D., in the *Medical Examiner* for May, 1855. He says the effects of quinoidine are very nearly those of the ordinary sulphate of quinine, in doses two-thirds larger than those of the latter; he succeeded in perfectly checking intermittent fever, without the unpleasant effects so often noted in sulphate of quinia, as, buzzing in the ears, vertigo, etc. Age does not constitute any objection to its use, for it was employed with equal advantage in the very young and very old. He cites fifty-three cases; in forty-nine of these cases the chills were arrested by the first administration of the medicine. (He used the purified chinoidine of the manufacturers.)

I think I have conclusively shown that chinoidine, chemically considered, is nearly identical with crude quinine. Therapeutically it possesses valuable medicinal properties. In some cases it could be employed more advantageously (in larger doses) than the sulphate of quinia. Therefore, why does it not meet the requirements of crude quinine?

The objections some might raise are, it is an amorphous substance, hence would be liable to adulteration. This objection might be raised against every amorphous article in the materia medica. I would say, to avoid this, use only that made by our most reliable manufacturing chemists, bearing their name and seal, and who think more of their name than of a dollar.

Pure chinoidine should be entirely soluble in alcohol and sulphuric acid. If a solution in sulphuric acid yields, on the addition of ammonia, the same amount of precipitate as was dissolved, it may be considered pure. When we take into account the high price of the sulphate of quinine, the possibility of a scarcity in the supply of cinchona bark from the countries producing it, and the large amount of chinoidine, and cheaper alkaloids, which have accumulated on the hands of the manufacturers, it seems as though this subject ought to receive greater consideration from the medical and pharmacal professions than it has thus far, for the following reasons: The demand for cinchona bark is so great that there has been danger of the supply failing altogether; in view of this, the cultivation of the cinchona tree has been attempted in countries where it is not indigenous. *Secondly*, The sulphate of quinia being the alkaloid most used, and there being little demand for the other products, the whole expense of working up the bark has to be added to the quinia salt, thereby making the cost very high, while the other products are hardly worth purifying, and can be bought very cheap. Is it to be wondered at that men are tempted to put out *Sweet Quinine*, *Light Quinine*, *Cincho-Quinine*, *Extract of Bark*, *Quinine Brute*, etc.?

The remedy is simple: Messrs. Rosengarten & Sons and Powers & Weightman are now putting up *purified* chinoidine, *pure* sulphates of cinchonidia and quinidia, and are trying to introduce them to the notice of the medical profession. Their names attached to them is a guarantee of purity; therefore, as pharmacists, let us aid them in bringing into use the so-called cheaper alkaloids of peruvian bark.

The advantages would be: *First*, There would be used up valuable remedies which are now dormant (or are not used). *Second*, By using these now neglected medicines, it would lessen the cost of manufacturing sulphate of quinia; and there would not be so large a demand for the alkaloid quinia and its salts as at present, and consequently there would not be as much bark used, and the cost of all the alkaloids would be lessened correspondingly. The benefits which would accrue from using these now waste products can, therefore, scarcely be estimated.

Chicago, June 21, 1875.

POLISHING BRASS.

The following recipe is a good one for polishing brass: Rub the surface of the metal with rotten-stone and sweet-oil, then rub off with a piece of cotton flannel and polish with soft leather. A solution of oxalic acid rubbed over tarnished brass soon removes the tarnish, rendering the metal bright. The acid must be washed off with water, and the brass rubbed with whiting and soft leather. A mixture of muriatic acid and alum dissolved in water imparts a golden color to brass articles that are steeped in it for a few seconds.

LABORATORY NOTES.

BY A. B. LYONS, M. D.

Solution of Iodo-Bromide of Calcium Compound.—The following are the results of a chemical analysis we have recently made of this preparation:

One hundred parts contain:

Calcium	8.72	Chlorine	20.35
Magnesium	1.35	Bromine	0.95
Sodium	1.20	Iodine	0.20
Potassium	a trace.	Silicic acid	not estimated.
Aluminum	a trace.	Organic matter	not estimated.

One fluid ounce therefore contains, approximately:

Chloride of calcium (anhydrous)	142	grains.
Chloride of magnesium	30	"
Chloride of sodium	18	"
Bromide of magnesium	6	"
Iodide of potassium	1½	"
Total mineral constituents	200	"

Iron, which is mentioned on the label as one of the constituents, was not detected in the sample examined.

The quantities of iodine and bromine were not determined with rigorous exactness, but the figures given are above rather than below those which exact analysis would yield.

The bromine is assumed, on theoretical grounds, to be in combination, in the solution, with magnesium. Of course the efficacy of the preparation would not be affected by substituting bromide of sodium for the bromide of magnesium in making up an artificial iodo-bromide, and the physician would have the satisfaction of knowing exactly what he was prescribing, and the option of varying the amount of any of the constituents, if it should seem desirable. The proportion of bromine and of iodine might be somewhat increased without rendering the prescription a very expensive one; as it is, five cents a bottle would be about a reasonable price for materials. Whatever is paid over and above this sum must be considered a tribute to the genius of the intellect that originated a combination of such extraordinary merit as to draw from reputable (?) physicians, all over the land, testimonials to its worth.

The elixir of iodo-bromide of calcium compound contains the same ingredients as the solution of ditto ditto, and apparently in about the same relative proportions. We have not made, however, a quantitative analysis, being content with a demonstration of the fact that the amount of iodine and bromine in this preparation is not greater than in the simple solution. The principal difference seems to be that this contains a relatively small proportion of the mineral ingredients, with the addition of sugar, licorice, sassafras, and other flavoring ingredients, and, possibly, of some sarsaparilla, cundurango, or other powerful vegetable alterative.

Bromo-Chloralum.—We have long ago expressed the opinion that the preparation sold under this rather pretentious name is essentially a chloride of aluminum. The following are the results of an analysis sufficiently exact for any practical purpose:

One hundred parts of bromo-chloralum contain:

Calcium	2.11	Chlorine	10.84
Aluminum	1 84	Bromine	0 25
Magnesium	0.07	Sulphuric acid	0.09
Sodium	0.43	Silica	not estimated.
Potassium	a trace.	Organic matter	a trace.
Iron	a trace.		

One fluid ounce therefore contains, approximately:

Chloride of aluminum	45½	grains.
Chloride of calcium	28	"
Bromide of magnesium	1½	"
Chloride of sodium	5	"
Sulphate of calcium	1	"
Total mineral constituents	82	"

Fluid Lightning.—Under this name there is sold, at the exorbitant price of a dollar for a half-ounce vial, a preparation reputed to have extraordinary virtue in subduing pain. A few drops of the liquid are placed in the palm of one hand, and applied over the seat of pain, while the other hand is applied in a similar way to the nape of the neck. In a few seconds there is experienced a pricking sensation, which is said to be caused by an electric current. This increases in intensity till it becomes, sometimes, almost insupportable, then, after five minutes or so, passes away, leaving a sensation of coolness in the part, and frequently taking away the pain completely.

On examination the preparation proved to be simply alcohol, containing a small quantity (about ten drops to the ounce) of *essential oil of mustard*, together with some oil of sassafras and oil of peppermint. It is well known that many of the essential oils have decided anæsthetic powers; the oil of peppermint, especially, is a common ingredient in the pain annihilators that are vended about the country. The oil of mustard produces a powerful counter-irritant effect, which is useful, not only for the relief of pain, but to secure a ready sale for an article whose powerful positive effects can be so easily demonstrated. Large quantities of the essential oil of mustard are now sold by the wholesale dealers, and doubtless made use of in compounding nostrums similar to this.

The profession may, perhaps, take a hint from this, and add to the list of recognized therapeutic agents one which has been hitherto neglected, but whose virtues are unquestionable.—*Detroit Review of Medicine and Pharmacy.*

THE VERDICT OF SCIENCE CONCERNING THE EFFECTS OF ALCOHOL ON MAN.

BY N. S. DAVIS, M. D., CHICAGO.

Alcoholic liquids, as derived from the fermentation of various fruits and vegetable substances, have been known and used from an early period in the history of our race. Being derived from the grape or fruit of the vine chiefly, the name vinum, or wine, was naturally applied to all these liquids, until some time in the seventh century, when a liquid obtained from the fermentation of corn began to be called beer by the Saxons.

During the prevalence of the Alchemists' or Arabian school of chemistry, in the eleventh century, the vinous liquids in use began to be subjected to distillation, by which the active intoxicating constituent was obtained in a concentrated form, to which was applied the name "spirit of wine," and afterwards the word "alcohol." This last word appears to have been first used by the Arabians to designate an impalpable cosmetic powder used by the women of that day. It was afterwards applied to various subtle powders, and finally to spirit of wine. The first really scientific use of the term "alcohol" with which we are acquainted was by Lemert, in his chemistry, published in 1698. For a long time after the discovery of spirit of wine, or alcohol, it was used only as a solvent or menstruum in the preparation and preservation of other substances, while the fermented liquids continued to be used as drinks. The impure and diluted alcohols derived from distillation of fermented liquids, known as brandy, gin, rum, and whisky, are of modern origin, having been introduced into use within the last two or three centuries. Although we have a large variety of beverages derived from fermentation and distillation, known as wines, beers, and distilled spirits, yet ethylic, or absolute ether, universally known under the name of alcohol, constitutes the active, controlling ingredient in them all. The amount of this alcohol in the fermented drinks, called wines, beers, ales, etc., varies from four to twenty per cent.; while in the distilled spirits, called brandy, whisky, rum and gin, it constitutes from fifty to seventy-five per cent. Separate the alcohol from all these liquids, and the remainder would be capable of producing very little more effect on the human system than pure water. The juniper in gin, the hop in beer, and the vegetable acids and fecula in wines, are in quantities too small to exert any important influence, and hence may be omitted from our further consideration.

When we speak of alcohol, therefore, or of the effects of alcohol, throughout the remainder of this paper, we mean to include all alcoholic liquids, whether fermented or distilled. Until analytical and organic chemistry had made sufficient progress to show the composition of the more common articles of food and drink, no efforts were made to explain the special or physiological action of alcohol on the human system. All liquids containing it were simply regarded as cordial or stimulant, and capable of supporting strength and life. When the chemico-physiological school of investigators, with Baron Liebig at its head, developed the fact that all alimentary substances were capable of being arranged into two classes, the nitrogenous and carbonaceous, they very naturally adopted the theoretical idea that the former, when taken into the system, were appropriated to the nourishment of the tissues, while the latter united with oxygen by a species of combustion, resulting in the development of animal heat and carbonic acid gas, and hence were familiarly styled "respiratory food."

Alcohol, being one of the purest of the carbonaceous class, and especially rich in carbon and hydrogen, was at once assigned a place at the head of the list of respiratory foods, and of supporters of animal heat. When taken into the living system, it was supposed to unite rapidly with the oxygen received through the lungs, evolving heat, and leaving as resultants carbonic gas and water; in this way its supposed heating and stimulating effects were explained.

The simplicity of the explanation, coupled with the high authority of Liebig, caused it to be almost universally accepted, although resting on a purely theoretical basis, without a single experimental fact for its support. It was not long, however, before Dr. Prout, of London, ascertained by direct experiment that the presence of alcohol in the human system directly diminished the amount of carbonic acid gas exhaled from the lungs, and consequently there could be no combustion or oxydation of the alcohol by which it was converted into carbonic acid and water. Dr. Percy and others, by examination, found that alcohol, taken in a dilute form into the stomach, was taken up without change of composition, and carried with the blood into all the organs and structures of the body; and that its presence could be easily detected by the proper chemical tests. The chemico-physiologists, however, still assuming that alcohol, being a hydro-carbon, must necessarily be used for maintaining temperature and respiration, suggested that the union of its elements with oxygen might be such as to result in forming acetic acid or aldehyde instead of carbonic acid gas. Hence they still sustained the popular belief that alcoholic drinks were capable of increasing both the temperature and strength of the human body. In the meantime, the process of experimentation went on. Dr. Boker, of Germany, by a well-devised and carefully-executed series of experiments, proved that the presence of alcohol in the living system actually diminished the sum total of eliminations of effete matter daily; and consequently, that its presence must retard those molecular changes by which nutrition, secretion, and elimination are effected. In 1850, the writer of this paper prosecuted an extensive series of experiments to determine the effects of different articles of food and drink on the temperature of the body, and on the amount of carbonic acid excreted from the lungs. These experiments proved conclusively that, during the active period of digestion after taking any ordinary food, whether nitrogenous or carbonaceous, the temperature of the body is always increased; but after taking alcohol, in the form of either fermented or distilled drinks, the temperature begins to fall within half an hour, and continues to decrease for from two to three hours. The extent and duration of the reduction of temperature was in direct proportion to the amount of alcohol taken. The results of this series of experiments were embodied in a paper, read to the American Medical Association in May, 1851. [See *Northwestern Medical and Surgical Journal* for 1851.] A few years later, the experimental researches of Lallemand, Perrin, and Duroy, proved conclusively that alcohol, when taken into the stomach, was not only absorbed and carried with the blood into all the organs and tissues of the body, but also that it was eliminated as alcohol, unchanged chemically, from the lungs, skin and kidneys. The experiments of Prout were repeated, and his results confirmed by Sandras and Bouchardet, of France; W. A. Hammond, myself and others of this country. Those of Boker were carefully repeated and varied by Anstie, of England, and Hammond, of this country. My own, in reference to the effects of alcohol on animal heat, have been repeated, and the results confirmed by a large number of observers, among whom are Drs. Richardson, Anstie, and Hammond. Those of Lallemand, in reference to the elimination of alcohol, have been equally confirmed, except the claim that the amount eliminated is not equal to the whole quantity taken. Hence, the following propositions may be stated as fully established scientific facts:

First—That alcohol, when taken diluted, in the form of fermented or distilled spirits, is rapidly absorbed without change, carried into the blood, and with that fluid brought in contact with every structure and part of the human body.

Second—That, while circulating in the blood, its presence retards those molecular or atomic changes by which nutrition, disintegration, and secretion are maintained, and the phenomena of life continued.

Third—That its presence retards the elimination of waste matter, impairs nerve sensibility, lessens muscular excitability, and lowers the temperature of the body.

Fourth—That a part, at least, of the amount taken is finally eliminated or thrown out of the system with the excretions, without having undergone any appreciable chemical change.

These facts are as well established as any in the domain of physiology, or in the whole field of natural science, and they point with all the clearness and force of a mathematical demonstration to the conclusion, that alcohol is in no sense food; neither furnishing material for the tissues nor fuel for combustion, nor yet generating either nervous or muscular force. Having thus determined, experimentally, that alcohol is neither food nor a generator of force in the living body, the question recurs, What are its positive effects when taken in the ordinary manner? I answer, simply those of an anæsthetic and organic sedative. Like ether and chloroform, its presence diminishes the sensibility of the nervous system and brain, thereby rendering the individual less conscious of all outward and exterior impressions. This diminution of sensibility, or anæsthesia, is developed in direct ratio to the quantity of alcohol taken, and may be seen in all stages, from simple exemption from all feeling of fatigue, pain, and idea of weight, exhibited by ease, buoyancy, hilarity, etc., to that of complete unconsciousness and loss of muscular power. It is this anæsthetic effect of alcohol that has led to all the popular errors and contradictory uses, which have proved so destructive to human health and happiness. It has long been one of the noted paradoxes of human action, that the same individual would resort to the same alcoholic drink to warm him in winter, protect him from the heat in summer, to strengthen when weak or weary, and to soothe and cheer when afflicted in body or mind.

With the facts now before us, the explanation of all this is apparent. The alcohol does not relieve the individual from cold by increasing his temperature; nor from heat by cooling him; nor from weakness and exhaustion by nourishing his tissues; nor yet from affliction by increasing his nerve power; but simply by diminishing the sensibility of his nerve structure, and thereby lessening his consciousness of impressions, whether from cold, or heat, or weariness, or pain. In other words, the presence of the alcohol has not in any degree lessened the effects of the evils to which he is exposed, but has diminished his consciousness of their existence, and thereby impaired his judgment concerning the degree of their action upon him.

It is this property of alcohol to produce that sense of ease, buoyancy, and exhilaration, arising from a moderate diminution of nerve sensibility, that gives it the fascinating and delusive power over the human race, which it has wielded so ruinously for centuries gone by. But while the presence of alcohol diminishes the sensibility of the nervous structure, it also retards all the molecular changes, thereby diminishing the activity of nutrition, secretion, elimination, and the evolution of heat, constituting a true organic sedative. When taken in small quantities, repeated daily, the individual usually slowly increases in weight, not from increased nutrition, but from retarding the waste and retaining the old atoms longer in the tissues. By some investigators, this power to retard atomic changes, and consequently to retain the old atoms, has been regarded as equivalent to nutrition, or the actual assimilation and addition of new atoms. It is on this basis that Dr. Hammond and a few others persist in representing alcohol as indirect food. The fallacy of such claim, and its mischievous tendency, will be fully apparent by reference to one of the plainest laws governing living animal matter. The law is, that all the phenomena of animal life are associated with and dependent on atomic changes, and that each individual cell or aggregation of bioplasm constituting an organic atom, has its determinate period of growth, maturity, and dissolution. Hence, to introduce into the living system any agent that will retard atomic change, is equivalent to retarding the phenomena of life. And if, by retarding the atomic changes, cells or atoms are retained in the tissues longer than the natural duration of their activity, such retention may increase the bulk and weight, but in the same ratio it embarrasses the tissues with the presence of material which is constantly becoming inert and tending to degeneration. Consequently, the individual who thus increases his bulk and weight by taking just enough of the weaker alcoholic drinks daily to retard the processes of secretion and waste, in the same proportion diminishes his activity, his power of endurance, and his ability to resist the effects of morbid agents of every kind. This is abundantly illustrated by the thousands of beer and wine drinkers, who, from twenty to twenty-five years of age, were muscular, active, capable of any reasonable endurance, with a weight of 150 pounds, but who, after moderately retarding atomic changes, and retaining old atoms, by the daily use of wine or beer, have acquired a weight of 200 pounds, or more, and have lost their muscular activity and endurance to such an extent that an active exercise of twenty minutes would make them puff like a "heavy horse." It is this sedative effect of alcohol on the organic or molecular changes in the tissues, retaining waste and effete matter that ought to have been promptly disintegrated and thrown out, which impairs the vital properties, and predisposes or prepares the system to yield to morbid influences of any kind to which it may be exposed. And especially does this sedative effect of alcohol on the organic changes, when maintained by a moderate and continued use of the article, favor those degenerative changes which result in tubercular, caseous, and fatty deposits in the lungs, liver, kidneys, heart, and arteries of the brain, and in materially shortening the duration of life. It is the same interference with the processes of nutrition and waste, only exerted more actively, that causes gastritis and delirium tremens in the excessive drinker of distilled spirits. If you ask for the special *modus operandi* of alcohol, how it produces its anæsthetic and sedative effect when taken into the human system, I answer, chiefly by its strong affinity for water and albumen. The two last named substances exist in the blood and all the tissues of the body, and for them alcohol has a strong chemical affinity. Hence, when it is present in the blood, it attracts the water from the blood corpuscles, causing them to become more or less corrugated, and inclined to adhere to one another, as described by Dr. Richardson, of London, and diminishing the capacity of the blood to absorb oxygen or other gases from the air in the lungs; and by its strong affinity for the albumen of the tissues, it retards the play of vital affinity between that substance and the other materials with which it is in contact, thereby retarding the molecular changes, as already described. The paralyzing effect exerted on the vaso-motor, as well as cerebro-spinal nervous structures, by which sensibility is impaired, is owing partly to the direct anæsthetic properties of the alcohol, and partly to the diminished interchange of oxygen for carbonic acid gas in the process of respiration. That a part of the alcohol should be retained for a considerable length of time in the system, by the affinities just mentioned, is very probable. Hence, the late Dr. Anstie may have been correct in claiming that it was not all eliminated from the system within any limited period of time, and yet its retention would afford no proof that it was either appropriated as food or for the generation of force.

On the contrary, the catalytic influence of its presence retards both. If we scan the whole domain of physiology and pathology, in connection with the logical deductions from the experimental researches by parties widely separated by time, space, nationality and language, we shall be forced to the conclusion that alcohol, as found in any or all of the fermented or distilled drinks, is neither stimulating, strengthening, nor nourishing to the human system, but simply anæsthetic and sedative. Consequently, it can not be used in health without injurious effects, proportioned to the quantity used and the frequency of its repetition. Its applicability as a remedy in the treatment of disease is extremely limited; so much so that it might be wholly dispensed with, without any injury to the sick, every intelligent physician being able to supply its place with other remedies of equal if not greater value, in the limited number of cases in which it is applicable. Such we regard as the just and legitimate verdict of true science, regarding the effects of alcoholic drinks on man. We might amplify this paper by the citation of additional authorities and illustrative facts, until it would fill a volume; but we have thought it more profitable, and better fitting the present occasion, to limit it to a concise and plain statement of the present state of knowledge on this important subject.—*Chicago Medical Examiner.*

OFFICIAL *VERSUS* OFFICINAL.

BY JOSEPH INCE.

Dr. Miller is reported in the *Journal* (May 8) to have read a paper before the Philadelphia College of Pharmacy entitled "Official and Officinal."

In it he disputes the correctness of Professor Attfield's adoption of the word official when applied to articles contained in the "Pharmacopœia." The passage in the "Manual of Chemistry," which raised the question, is as follows:

"The 'Pharmacopœia' and all in it is official (*office* Fr. from L. *officium*, an office). There are many things which in pharmacy are *officinal* (Fr. from L. *officina*, a shop), but not official. To restrict the word *officinal*, first, to the contents of a pharmacist's shop, and, second, to that portion of the contents which is pharmacopœial, is radically wrong, and should be avoided."

Dr. Miller's chief objections were, that the two words were both derived from the same root, and the distinction was therefore arbitrary; that the term officinal had become established, and that its signification was well understood by all pharmacists.

The difficulty seems to depend on the want of an accurate application of the rules of etymology. That is official, in title or mode of preparation, which emanates from a legally constituted and recognized authority. That is officinal, a pharmaceutical expression, which is prepared according to the private judgment of a manufacturer and issued under the sanction of his *officina* or workshop.

Thus, for years Mr. Schacht's liquor bismuthi was an officinal remedy; since the production of the British "Pharmacopœia," it has become official. The statement that the two words being derived from the same root renders the modern distinction arbitrary or immaterial does not hold good.

In the first place, official and officinal are not immediately taken from the same root.

Officina, which gives *officinal*, is the contracted form of *opificina*, from *opifex*, the workman. It means a workshop — hence a laboratory — hence, in the third place, a shop, or place where manual labor is performed.

Officium, which gives *official*, is the contracted form of *opificium*, the working or the work; and does not involve one solitary allusion to mechanical employment.

In the second place, not only may varied forms of words, drawn from one ultimate common source, be adopted with extreme advantage, but the *same* word, bearing totally different applications, may be traced to the same root; and it would be unsound in etymology to assimilate the meaning of either, or force them into convertible terms. Such a course would make havoc of the English language.

Let the word "office" stand as an illustration. Mr. Bremridge is the secretary of an official body, and the secretarial office is in Bloomsbury Square. It is surely not an arbitrary selection of a phrase to say in relation to his work that each member of the Council receives an official, not an officinal notice, when his attendance is desired. These summonses are authoritative, the delegated acts of authority, and consequently official. The names, the formulæ, and the instructions of the "Pharmacopœia" rest on the same foundation, and we are bound to use the fit expression. But a merchant in the city likewise keeps an office—the word is identical—yet his written directions to his clerks are not official, for they are of a private, personal character; nor are they officinal, for the latter only bears a medical signification. They are called *office* notices, and it is not arbitrary but strictly in accordance with the genius of the language to limit terms to their strict meanings, and to use their variations properly. To accomplish this thoroughly was Professor Attfield's motive in the construction of his book. He knew that to attach the word "official" to titles and preparations which come to us clothed with direct authority, was to follow the rules of common sense as well as those of grammar. Instead of keeping in the track of hereditary misconception, a careful writer coming upon a doubtful word asks himself—what does this expression mean? and he is not compelled to perpetrate an error because it has passed unchallenged through the hands of successive authorship.

The credit of the initiation of the reform is due to the veteran author of the "Companion to the British Pharmacopœia."

It need not be pointed out to Dr. Miller that in French *l'officine* means the laboratory of a pharmacist, and his shop generally; that *les preparations officinales* are such as are found ready made in that *officine*, as distinct from *preparations magistrales*, which are made extemporaneously from the prescriptions of a physician.

The term "officinalis" still holds its place in botany because it is the Latin word; and the plants to which it is applied were those used in medicine and stored in the *officina* of the pharmacist.

Lastly, there is no wish in these remarks to stoop to special pleading.

It is at once conceded that up to a recent date the term officinal has been employed in the sense in which Dr. Miller would have it still retained; and that that use is fairly intelligible to pharmacists at the present time.

It is contended, on the other hand, that the old practice is open to serious question; that it cannot be defended fairly; and that the new nomenclature has solid arguments for its support.—*London Pharm. Journal.*

BY JOHN FREDK. STANFORD, M. A., F. R. S.

SIR: Having for a long time been engaged upon a new etymological dictionary of the English language, perhaps I may be permitted to offer an opinion on the meaning of the terms "official," and "officinal. Officinal is certainly derived from the Latin "officina," which means, primarily, a workshop, a manufactory; secondarily, a shop or place where anything is sold. In pharmacy it has long been the term applied to such medicines or drugs, simple or compounded, as were required by the College of Physicians to be kept in the apothecaries' shops, ready for use, or to be mixed up in extemporaneous prescriptions, so that the idea raised in the mind by the use of the word officinal was, "such as you will find at the shop." "Official" (Latin "officialis") means now an officer or an authorized and appointed person for the performance of official duties (*vide* Cicero, *De Officiis*). Magistrates, judges, and their decisions, writings, judgments, orders, etc., are said to be official as pertaining to an officer. This word "officialis" was certainly first introduced at the end of the thirteenth century, and was then limited to the person who acted as the bishop's deputy, or to an ecclesiastical judge appointed by him—but soon became extended. Now, as to the paper of Dr. Miller, I think Mr. Ince writes with great knowledge of the subject, but I venture, as an old Cambridge scholar, to observe that many learned philologists believe both the words officinal and official to spring from the same radix, viz., from *officio*, which, in early Roman literature, had the same meaning as efficio. No doubt some believe "officina" to be abbreviated from *opificina*, which, like *opifex*, of course came from "opus" and "facio;" but *officio* comes also from *ob-facio*, as a radix, so that, philologically, Dr. Miller may be right, though, not having heard or read his paper, I can not judge. But he is certainly wrong in the recognized meaning and distinct meaning of the two terms.—*London Pharm. Jour.*

SYRUPS FOR MINERAL WATERS.

BY B. F. JAMES.

The formulæ which have been published for the preparation of syrups for mineral waters are very numerous, and may be found scattered through the various journals and books of receipts. Many of these formulæ leave nothing to be desired; but the good and bad are so indiscriminately mixed, that we have thought it might be useful to present a series which should prove uniformly satisfactory, with a few suggestions which may be new to some of our readers.

A syrup of the best quality should be perfectly *clear* and *brilliant;* its flavor should be marked, but *delicate* and *fresh;* and it should keep well without depositing or acquiring a musty odor or an acrid taste.

Cheap syrups may be easily prepared; but a syrup of the best quality, requiring, as it does, more labor and skill in its preparation, and the highest purity and excellence of the materials used, is necessarily more expensive, though the difference in cost between a first-class syrup and a poor one is far less than the difference in quality between the two extremes as they are usually found in the market.

The formulæ given below are for first-class syrups only.

SIMPLE SYRUP.

As many of the syrups in common use are made from simple syrup by adding the flavor thereto, great care should be taken with the preparation of this article.

The proper quantity of sugar for syrups will in general be found to be

2 lbs. (av.) to every 1 1-4 pints of water, or 13 lbs. to the gallon. These proportions, allowing for the water lost during the process, are those best calculated to produce a syrup of the proper consistence and possessing good keeping qualities. Guibourt recommends for the production of a perfect syrup 30 parts of sugar to 16 parts of water. Only the best refined sugar should be used. What is known as "granulated" sugar is preferable to that which is in lumps, or loaf-sugar.

FORMULA FOR SIMPLE SYRUP.

Sugar (best refined)	13 lbs. av.
Water	1 gallon.

The sugar should be placed in a suitable kettle (porcelain lined or tinned copper) and the water added cold; the two should be allowed to lie together for an hour or two, with occasional stirring, and then the white of one egg beaten to a froth should be well stirred in, and a gentle heat applied to finish the solution. When the sugar is completely dissolved, the syrup should be boiled for half a minute or a minute; this coagulates the albumen, which rises to the surface and clarifies the syrup; the impurities may be skimmed off, and the syrup strained through clean flannel. This syrup, which is as white and clear as water, should be kept in a moderately cool place.

LEMON SYRUP.

Although one of the most common of soda syrups, lemon syrup is perhaps the most difficult to prepare.

A perfect lemon syrup should, when mixed with ice-water, have the freshness of lemonade; but, unless the very *best materials* are used, this result will not be obtained.

The turpentine taste so common in lemon syrup is due to the use of impure or old oil of lemon; the greatest care should be exercised, therefore, in the selection of the oil, and only that which is perfectly pure and fresh used for this purpose. Citric acid only should be used in preparing lemon syrup, because this acid not only has a more agreeable flavor, and one more closely resembling the acid of lemon juice, but syrup made with it keeps better than when tartaric acid is employed. Some manufacturers keep a solution of citric acid, which can be added as required. It is better to dissolve the citric acid when wanted rather than to keep it in solution, on account of the superior freshness of the syrup obtained in this manner.

Oil of lemon (fresh)	20 to 25 drops.
Citric acid	1 oz., troy.
Simple syrup	1 gallon.
Sugar (powdered)	4 ozs., troy.
Alcohol	1 oz., fl.

The citric acid should be dissolved in a small quantity of water (1 fl. oz.) and added to the syrup.

The finely powdered sugar should be placed in a mortar, and the oil of lemon, previously dissolved in one ounce of alcohol, should be added and intimately mixed with the sugar; a small quantity of the syrup should be then added to the mixture, and the whole poured into the remainder of the simple syrup.

After standing, with occasional agitation, for an hour, the syrup should be filtered.

Lemon syrup prepared in this manner is clear and bright, keeps well, has a delicate flavor, and is altogether superior to lemon syrup as ordinarily made.

If good oil of lemon cannot be obtained, 1 fl. oz. of Burnett's extract of lemon may be used in its place.

VANILLA SYRUP.

Simple syrup	1 gallon.
Pure extract of vanilla	2 fl. ozs.

Mix and filter.

RASPBERRY SYRUP.

Simple syrup	6 pints.
Raspberry juice.	2 pints.

Mix.

STRAWBERRY SYRUP.

Simple syrup	6 pints.
Strawberry juice	2 pints.

Parrish gives the following formula for fruit syrups:

Fresh fruit (strawberries, raspberries, or blackberries,) 4 qts.

Express the juice and add water till it measures 4 pints; then add 8 lbs. of sugar, apply heat, raise to the boiling point, and strain.

PINE APPLE SYRUP.

Pine apple juice	1 pint.
Simple syrup	1 gal.
Citric acid	2 ozs.

The juice and the syrup should be mixed, heated to boiling and strained; afterwards, the citric acid should be added.

ORANGE SYRUP.

Simple syrup	1 gallon.
Extract of orange	2 fl. ozs.
Citric acid	6 drams.

Mix as in the preparation of lemon syrup.

GINGER SYRUP.

Fluid extract of ginger	2 fl. ozs.
Sugar	4 troy ozs.
Carbonate of magnesia	1 oz.
Simple syrup	1 gallon.

The extract of ginger is rubbed in a mortar with the carbonate of magnesia, and afterwards to this mixture is added the sugar, and thoroughly mixed; this is then added to the syrup, the whole is heated, but not boiled, and the syrup filtered. This gives a bright, clear syrup.

SARSAPARILLA SYRUP.

Simple syrup	1 gallon.
Essence of sassafras	½ fl. oz.
Essence of checkerberry	½ fl. oz.
Essence of lemon	2 drams.
Caramel	4 fl. ozs.

COFFEE SYRUP.

Pure ground Java coffee	½ lb.
Pure Mocha coffee	½ lb.
Water	1 gal.
Sugar	10 lbs.

Place the coffee in a stone jug or jar; heat the water to boiling, pour the water upon the coffee, tightly close the vessel, and when cold, filter and add the sugar, with very slight heat to facilitate the solution.

A variety of flavors is obtained by mixing different syrups; among these may be mentioned sherbet, orgeat and nectar.

SHERBET SYRUP.

Lemon syrup	1 part.
Pine apple syrup	1 part.
Vanilla syrup	3 parts.

ORGEAT SYRUP.

Simple syrup	1 gal.
Extract of vanilla	1 oz.
Extract of bitter almonds	½ oz.

NECTAR SYRUP.

Lemon syrup	2 parts.
Pine apple syrup	1 part.
Vanilla syrup	5 parts.

To promote the frothing of syrups for use at the soda fountain, a little gum arabic is added; but this addition should be made only to small portions of syrup, as occasion requires, as the presence of mucilage affects the keeping qualities of the syrup.—*The Laboratory.*

THE ACTION OF IODINE UPON RHUBARB*.

BY C. HUSSON.

When a specimen of rhubarb in lump is examined, the physical characters, described by Cauvet,† are nearly always sufficient for the purpose of recognizing the quality and source of the drug. When, however, the examination is made of a sample in powder, the physical characters are insufficient, and the chemical properties leave much in doubt. In this latter respect the author thinks it would be of service to place on record some observations as to the phenomena that occur when rhubarb is submitted to the action of tincture of iodine. Like nearly all vegetable

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*Abstract of a paper in *L'Union Pharmaceutique*, vol. xvi., p. 99.

†See *Pharm. Journal*, [3], vol. ii., p. 1,009.

substances, rhubarb is capable of taking up a considerable proportion of iodine. The causes of this absorption are numerous, and the alkaline salts take their part in the phenomenon; but it is incontestable that the organic matters are also concerned in it.

The test liquor used by the author was a tincture of iodine (1 in 40,) added by means of a burette graduated to $\frac{1}{20}$ of a cubic centimetre. The experiments were made upon picked specimens, in which the physical characters were clearly recognized whilst whole, and which were afterwards reduced to a fine, but not impalpable powder. The method adopted for testing was to suspend 5 grams of powder in 125 grams of distilled water, which was afterwards evaporated in a porcelain capsule to one-half, with continual stirring. It was then poured without filtering into a white phial, and restored to the original volume, care being taken to wash the capsule with a little water to remove adhering particles. To this liquor, when cool, iodine was added until it gave a blue color with starch mucilage. As at the close of the operation it was difficult to recognize the starch reaction because the liquid was turbid, this was ascertained by removing a drop or two of the liquid by means of a glass rod from the phial and letting it fall on some starch mucilage placed in a porcelain plate.

China Rhubarb, flat variety.—The convex surface presented the white lines disposed in a delicate network, mentioned by Cauvet; the under surface also showed the stars indicated as characteristic. It crackled under the teeth, and was hard and compact. Five grams of the powder, treated by the above process, gave a beautiful yellow-brown decoction, which heated with the tincture—

Absorbed without changing color	14	c.c.
Changed color with	17	"
Became dirty green with	23	"
Gave freely a blue color with starch with	25	"

Or after having neutralized 0·625 gram of iodine. Thus 100 grams of this rhubarb would absorb 12·50 grams of iodine.

If the decoction were allowed to stand after the operation, it was remarked that the liquid portion separated with difficulty from the insoluble matters. At the end of twenty-four hours it formed two layers,—the upper of a dark brown color, the lower of a greenish brown,—separated by a greenish blue line.

If instead of boiling the rhubarb it was allowed to macerate twenty-four hours in 100 grams distilled water, stirring it every hour for the first twelve hours, about one-half the quantity of iodine was absorbed.

Chinese Rhubarb, round variety.—This rhubarb presented the same white network as the preceding; the interior, although more porous, was far from being spongy. The absorbent power of this specimen was greater than the former, as the decoction did not give a blue color with starch until it had neutralized 29 c.c. of tincture, or equal to 14.50 grams of iodine to the 100 grams of rhubarb. After standing the liquid separated into two layers; the upper of a fine yellow-brown color, the lower of a rather dirty yellow.

It may be admitted that this rhubarb, having the same origin as the former, belonged to an older plant. The starch had become transformed, thus augmenting the porosity and absorbent power of the rhubarb. It follows that although less handsome than the preceding it is more active, provided that it has not become altered. The product obtained by simple maceration neutralized 7 grams of iodine per 100 grams of rhubarb, or about half the proportion neutralized by the decoction.

Russian Rhubarb.—The specimen experimented upon presented the characters indicated by Cauvet. The interior was of a dark yellow color, veined at the center in white and red. The color of the decoction was a rather redder brown than the preceding. Upon the addition of the tincture of iodine it—

Changed color with	10	c.c.
Became bottle green with	12	"
Became a deep greenish blue with	17	"
Gave a strong blue color with starch mucilage with	20	"

Hence 100 grams of this rhubarb would neutralize 10 grams of iodine. Upon standing, the liquor quickly formed two layers; the upper layer was of a greenish yellow color, the insoluble portion was greenish blue. The product of maceration absorbed 5·5 per cent. of iodine, or little more than half as much as the decoction.

French Indigenous Rhubarb.—The specimen used was a very fine one. The decoction neutralized 10 per cent. of iodine, or as much as the Russian rhubarb. It was distinguished from the other, however, by the phenomena which accompanied the absorption of the iodine. The first drops of the tincture upon coming into contact with the liquor colored it blue immediately, which did not occur with the other rhubarbs. This color disappeared quickly upon agitation. After adding of the tincture of iodine—

8 c.c. the liquor remained of a dull color.
10 c.c. it acquired a bottle-green color.
11 c.c. it acquired a blue-green color.
12 c.c. it acquired a blue-black color.
20 c.c. it blued starch strongly.

Upon standing, the liquor separated into two not very distinct layers; the upper being green, nearly black, the lower quite black. The product of maceration absorbed 5 per cent. of iodine.

The differences above indicated the author considers to be sufficiently distinct to assist in recognizing the nature of a rhubarb, whilst not neglecting known methods. He believes, in fact, that the greater the proportion of iodine neutralized before any change in the color of the decoction is manifested, the more certainty there will be that a rhubarb is of good quality. On the contrary, the less the proportion of iodine required to produce a greenish tint in the liquid, and to give afterwards a blue-black residue, the poorer would be the quality of the rhubarb.

One practical consequence of these reactions, which the author points out, is the possibility of having a certain number of iodized preparations, in which the iodine is completely masked by the organic matter. Thus it would be easy to prepare an extract of rhubarb containing a considerable quantity of iodine, which would not be driven off from the combination under the influence of heat. He suggests the following formula for a syrup of iodized rhubarb, which would contain 5 grams of iodine per litre:

Macerate for twenty-four hours 100 grams of Chinese rhubarb, coarsely powdered, in 400 grams of water. Strain, press and wash the residue with 100 grams of water. Filter so as to collect 400 grams of liquid. Add gradually a quantity of tincture containing 5 grams of iodine as concentrated as possible. Dissolve in it 800 grams of sugar, and afterward strain.—*London Pharm. Journal.*

FLORAL TIME-KEEPERS.*

When the evening draws its vail over gardens and fields, most plants and flowers fold their delicate leaves and petals as if they were conscious of the approach of darkness and cold.

The appearance of the leaves and flowers of many plants becomes so changed, when in this condition, that it is very often difficult to recognize them.

Linnæus has called this condition the sleep of plants; but the expression does not indicate a state of repose, of weakness or flaccidity, as in the case of animals, for the nocturnal condition of plants is as firm and elastic as it is during the day.

In order to study this condition more completely, it was the habit of Linnæus to deprive himself of sleep, in order that he might devote the hours of the night to observations of the flowers and plants of his garden.

Linnæus soon found that it was not to the cold, but to the absence of light, to which these phenomena were due; he was thus enabled to establish the relations which exist between plant life and light upon a better foundation than had been done by his predecessors.

The positions assumed by leaves during the night depend upon the nature of the leaf—whether simple or compound—the difference being most distinctly marked in the latter. In the wood-sorrel, the leaflets bend toward the stalk, their under side in close contact with it, leaving only their upper surface visible. In the clover, the leaflets remain erect, but the sides approach, forming a sort of cradle; the sweet pea and garden bean fold their leaves so that one sustains the other. These changes and movements are executed according to constant and definite laws, so that the position of leaves during sleep is characteristic of certain species.

Any one walking in a botanic garden after sunset may repeat many of the observations of Linnæus, in regard to the different aspect presented by plants during the night. In some, the leaves are erect and cover the stem; in others, they hang down and protect the leaflets with their under side. In some plants, the leaves approach each other, so as to give the appearance of a boat; in others, they roll themselves like a trumpet.

In plants having simple and rounded leaves, as in the mallows, the upper surface is concave or convex according to the time of day.

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* Translated for the *Laboratory* from the French of Fulgence Marion.

To what cause are these phenomena due?

Linnæus and De Candolle considered light as the most direct cause. De Candolle exposed plants which closed their leaves during the night to a powerful artificial light. "When I exposed these plants to light by night," says this botanist, "and left them in darkness during the day, they opened and closed their leaves at first without any fixed rule; but after a few days they adapted themselves to the new condition of things, opening their leaves in the evening, which was the time when light began for them, and closing them during the daytime, which was their night."

The conclusion to be arrived at from these facts is, that the tendency to periodical motion is inherent in plants, and that light is the active cause. It must, however, be admitted that Duhamel and Mairan obtained results unfavorable to this theory; for each of these observers, having placed a sensitive-plant in a dark place, found that it continued to open during the daytime, and close by night, as in the light, and under ordinary circumstances.

There are many plants whose flowers expand and close at certain fixed hours. Having observed this fact, Linnæus established what he called "a floral clock." He made three divisions: a meteorological division, containing flowers that open or close earlier or later, according to the condition of the atmosphere, and, consequently, indicate the state of the weather; a tropical division, as he called it, consisting of flowers that open at sunrise and close at sunset; and a horological division, consisting of flowers that open and close at fixed hours. It is this latter division that forms the floral clock.

The times of the opening and closing of flowers vary, however, according to locality, and are hardly so punctual to a few minutes as such floral clocks would lead us to believe.

THE FLORAL CLOCK.

A table of flowers that open successively at different hours of the day and night:

12, Night.	Night-blooming Cereus—*Cactus grandiflorus.*
1, A. M.	Lapland Sow Thistle—*Sonchus Lapponicus.*
2, A. M.	Yellow Goat's Beard—*Tragopogon luteum.*
3, A. M.	Great Pieris—*Pieris magna.*
4, A. M.	Smooth Hawksbeard—*Crepis teclorum.*
5, A. M.	Day Lily—*Hemerocallis fulva.*
6, A. M.	Shrubby Hawkweed—*Hieracium fruticosum.*
7, A. M.	Sow Thistle—*Sonchus oleraceus.*
8, A. M.	Pimpernel—*Arragallis arvensis.*
9, A. M.	Field Marigold—*Calendula arvensis.*
10, A. M.	Mesembryanthemum—*Mesembryanthemum Neapolitana.*
11, A. M.	Lady Eleven o'Clock—*Ornithogatum umbellatum.*
12, Noon.	Ice Plant—*Mesembryanthemum crystalinum.*
1, P. M.	Prolific Pink—*Dianthus prolifer.*
2, P. M.	Hawkweed—*Hieracium.*
3, P. M.	Dandelion—*Leontodon taraxacum.*
4, P. M.	Alyssum—*Alyssum alyistrides.*
5, P. M.	Evening Primrose—*Oenothera biennis.*

6, P. M. Geranium—*Geranium triste.*
7, P. M. Naked Stemmed Poppy—*Papaver nudicalis.*
8, P. M. Erect Convolvulus—*Convolvulus rectus.*
9, P. M. Linnæan Convolvulus—*Convolvulus Linnæi.*
10, P. M. Purple Ipomea—*Ipomea purpurea.*
11, P. M. Night-flowering Catch-Fly—*Silene noctiflora.*

Among the flowers which open at a fixed hour, several do not open again after closing, as the Syrian mallow; the flax plant (*Linum usitatissimum*) closes its flowers a few hours after expanding, never to open again; while others, like most composite flowers, continue to open until the flower dies away.

The time during which flowers remain open also varies; the white water-lily remains open for twelve hours, while the purslane closes in about an hour after opening.

There are many flowers which open only at night; one of the most remarkable of these is the night-blooming cereus, originally from Jamaica and Mexico.

The African marigold opens constantly at seven o'clock, and remains open until four o'clock, if the weather be fair. If it does not open, or if it closes before that hour, it is a sign of rain. In a similar manner, the Siberian thistle remains open all night, unless it is going to rain the following day.

If the bind-weed (*Convolvulus arvensis*), marigold (*Calendula pluvialis*) or pimpernel (*Arragallis arvensis*) are already open, they will shut at the approach of rain. The last, from this susceptibility, has been called the "poor man's weather glass."

The leaves of the *Porleria hygrometrica* fold downwards, or rise, according to the state of the atmosphere.

The ancients, as related by Pliny and Theophrastus, believed that the water-lily closed and sank at sunset, and rose again as soon as the sun appeared. According to some writers, this circumstance is the origin of the worship by the Egyptians of the nymphæalotus, which they considered sacred to the sun. Its flower and fruit are often to be seen engraven on Egyptian monuments. The flower ornaments the head of Osiris. Horus, or the Sun, is often represented seated on the flower of the lotus.

There is a singular plant, which grows wild in Bengal, called *Hedysarum gyrans.* In this plant the leaves consist of three parts: a large terminal leaflet in the center, three or four inches in length, and two very small lateral ones springing from the base of the former. The large leaflet performs a daily gyration, following the course of the sun; this motion is, of course, scarcely perceptible; but the two lateral leaflets keep up a continual motion, both by day and night; when one leaflet rises the other sinks—the motions being alternate and regular—a succession of jerks not unlike the second hand of a watch They are the more rapid in proportion as heat and moisture increase, and are most evident when the sun's rays are shining directly upon the plant.

It has been observed that, when the plant is in full vigor, the plant performs about sixty of these jerks per minute; thus we have a sort of vegetable watch.

"What mysterious forces," exclaims the naturalist Pouchet, "govern the life of a plant! Numerous experiments prove beyond doubt that there is evidently in plants a degree of sensibility analogous to that of animals." If sensitive plants are watered with narcotics, they are put to sleep, like men.

Prussic acid poisons plants with as much rapidity as it does animals.

"These beings, continues Pouchet, "now so graceful and now so imposing in form, adorned with dazzling colors, filling the air with the sweetest perfumes, are they left destitute of the faculties granted to the lowest of animals?"

Hedwig, a profound botanist, Bonnet and Edward Smith, attributed to plants an exquisite sensibility, and even the possession of the most delicate sensations.

Von Martius and Fechner look upon plants as sentient beings, endowed with individual souls; and the latter has carried his enthusiasm so far as to form a kind of vegetable psychology.

Such extremes do not find much favor nowadays with men of science; but poets have taken up the idea, and given it varied and beautiful expression.

The poet Darwin thus sings of the sensitive plant (*Mimosa sensitiva*):

> "Weak with nice sense, the chaste *mimosa* stands,
> From each rude touch withdraws her timid hands;
> Oft as light clouds o'erpass the summer glade,
> Alarmed, she trembles at the passing shade,
> And feels, alive through all her tender form,
> The whispered murmurings of the gathering storm;
> Shuts her sweet eyelids to approaching night,
> And hails with freshened charm the rising light."

Surely the Author of nature manifests His greatness as much in the germination of a plant as in the guidance of a sun across the starry fields; to spread out in space a milky-way rich in suns, or to close a corolla at the approach of fogs or the touch of the north wind, these are equally the work of a Divine hand, a hand that recognizes no difference between the great and the small.

THE DECOMPOSITION OF SOME SALTS BY WATER.*

BY M. DITTE.

In the first of two notes recently presented to the French Academy of Sciences, the author gives the result of an investigation into the action of water upon sulphate of mercury (HgO, SO_3). In contact with water at ordinary temperature the sulphate of binoxide of mercury immediately becomes colored, subsulphate ($3HgO, SO_3$) is precipitated, and the water becomes strongly acid. The reaction continues upon the addition of the neutral salt until the proportion of sulphuric acid set free attains a certain limit, when the liquid no longer decomposes, but simply dissolves the sulphate until saturated.

***Journal de Pharmacie et de Chimie*, for December, p. 448. The formulæ in this article are according to the old notation.

By experiment, M. Ditte has found that at a temporature of 12° C. water which contains less than 67 grams of free sulphuric acid to the litre decomposes the neutral salt, takes up the acid set free, and becomes saturated with subsulphate. As soon as the water contains more than 67 grams of free sulphuric acid to the litre it loses all chemical action upon the neutral salt, and dissolves it without decomposition. The neutral salt is even reproduced if there be an excess of subsulphate; so that whatever may be the starting point the final result is a liquor containing 67 grams of acid to the litre, provided that the temperature remains the same. But the liquor which at 12° C. ceases to decompose the neutral salt, attacks it again and becomes colored yellow if the temperature be raised. The presence of another acid in the liquor does not affect the phenomenon.

The second note of M. Ditte was relative to the action of water upon nitrate of bismuth, subnitrate of bismuth, and protochloride of antimony.

At the ordinary temperature crystals of nitrate of bismuth (BiO_3, $3NO_5$, $3HO$) are immediately decomposed by water, which becomes strongly acid. At the same time a white precipitate is formed which is always crystalline. The crystals correspond to the formula BiO_3, NO_5, with one, two, three or four equivalents of water, according to the temperature. The decomposition ceases when the free acid reaches the proportion of 83 grams to the litre, after which the nitrate is simply dissolved. If now either water or nitric acid be added the composition of the liquor undergoes modification until this proportion of free acid is restored; the liquor yielding the acid to the subnitrate and reconstituting the neutral salts if the proportion be exceeded, or decomposing the neutral nitrate in solution if it be deficient. Successive additions of water to an acid solution of neutral nitrate determine the precipitation of subnitrate, the liquor always returning to the limit of acidity until all the neutral salt has disappeared.

If a limpid solution of neutral nitrate be heated, there is formed a crystalline precipitate of subnitrate, which disappears upon cooling. The cause of this is that the proportion of free acid in a solution which is required in order that the neutral salt be not decomposed is augmented as the temperature is not raised; when heated the dissolved neutral salt is decomposed, but upon cooling, the free nitric acid combines with the subnitrate resulting from the elevation of temperature and the precipitate disappears.

Subnitrate of bismuth (BiO_3, NO_5, HO) is also decomposed by water into free acid and a more basic amorphose salt. The decomposition is slight in the cold, but at 100° the decomposition goes on until the water contains about 4·5 grams of free acid to the litre. By exhausting this salt with water a new basic nitrate is formed ($2BiO_3$, NO_5). At a temperature of 100° C. a liquid containing less than 4·5 grams of free acid to the litre immediately attacks the subnitrate and becomes turbid. When the free acid exceeds 4·5 grams to the litre the liquor becomes clear; the acid in excess combining with the subsalt ($2BiO_3$, NO_5) formed, the nitrate (BiO_3, NO_5) reappears with its crystalline form and silvery lustre.

Thus the neutral salt treated with water gives at first the crystalline subnitrate (BiO_3, NO_5), which washed with hot or cold water is converted into a white powder that is a mixture of basic salts ($2BiO_3$, NO_5 and BiO_3, NO_5). After prolonged washing with water a fixed product is obtained which is $2BiO_3$, NO_5.

That which has been said respecting nitrate of bismuth applies also to chloride of antimony (Sb_2Cl_5). It is decomposed by water into a white precipitate of oxychloride (Sb_2O_2Cl) and free hydrochloric acid, until the liquor contains about 159 grams of free acid to the litre, after which it dissolves without decomposition. Any liquor that contains a portion of free acid below this limit decomposes the protochloride into oxychloride and free acid; any liquor which contains more, on the contrary, produces protochloride. Oxychloride of antimony, like subnitrate of bismuth, is decomposed in its turn, especially at a temperature of 100° C.—*London Pharm. Journal.*

GOLD LEAF.

The process of gold-beating is exceedingly interesting in its various details, and is one which requires the exercise of much judgment and mechanical skill. The pure gold from the refiner is melted and cast into a bar (first being alloyed about one-half carat, to render it malleable), and then rolled in hardened cast-steel rollers as thin as the thinnest tissue paper about one inch wide. Fifty pennyweights of this ribbon is given to the beater, he giving a receipt therefor, and by him is cut into about 165 pieces, each one inch square. These pieces are placed in what is technically termed a "cutch," made of 165 pieces of a French prepared paper, about three inches square. After beating the gold to the size of the "cutch," using an 18 pound hammer, the gold is taken out and quartered. This now gives 660 pieces, which are put in what is technically known as a "shoder," consisting of about 700 pieces of "gold-beaters' skin," about four inches square, prepared from the outer membrane of the intestine of the ox, and which produces, by a secret method, a beautiful, clear and very thin skin, over which the gold in its thinnest state passes freely, and without much tearing or breaking. When the gold, by the use of a 12-pound hammer, is beaten to the size of the "shoder," it is taken out and each sheet again quartered on a leathern cushion, using a sharpened piece of reed to cut it with. We now have 2,640 pieces, which is divided into three parts, each put in a "mold" of 900 of these same "gold-beaters'" skins, only in their most perfect state, as the gold leaf now approaches its thinnest state. Each mold, when beaten about five hours with a 9-pound hammer, becomes, in the hands of the finished workman, what is known as "gold leaf," and is then sent to the female department, or cutting-room, where it is cut into 3⅜ inches square, and put into books containing 25 leaves each. This is an operation of great delicacy, and it is some months before a female becomes of much use in the business.—*Exchange. From Oil, Paint and Drug Reporter.*

Mr. A. W. Gerrard has succeeded in producing crystallizable salts from pilo-carpine, the alkaloid of jaborandi.

TRANSACTIONS OF PHARMACAL COLLEGES AND SOCIETIES.

AMERICAN PHARMACEUTICAL ASSOCIATION—NOTICE.

The twenty-third annual meeting of the American Pharmaceutical Association will be held at Odd-Fellows Hall, corner of Berkeley and Tremont streets, in the city of Boston, Mass., on Tuesday, September 7th, 1875, commencing at 3 o'clock, P. M.

Ample arrangements have been made by the local secretary, Mr. Samuel A. D. Sheppard, and the local committee of arrangements, for the reception of articles for exhibition; and it is confidently expected that a full display will be made. Exhibitors are reminded that, to insure a successful and advantageous display, it is necessary that the articles for exhibition should be in the charge of the local secretary several days before the meeting takes place; and they are, therefore, earnestly requested to make their shipments in time.

Chairmen of standing committees are requested to furnish a copy of their respective reports, together with a synopsis of the same, to the chairman of the committee on papers and queries, Mr. William Saunders, London, Ontario, as provided by article ix., chapter vi., of the by-laws. In a like manner, all persons writing a paper for the Association, whether in reply to a query or as a volunteer paper, will report to the same chairman, *previous to the third session*, (*vide* article viii., chapter vi., of the by-laws;) and it is particularly desirable that such paper, together with a synopsis of the same, be in the possession of the chairman before the opening of the first session.

Compliance with these requests will greatly expedite the business of the Association, which, in view of the arrangements to be made for the meeting in Philadelphia in 1876, promises to be more arduous than usual.

It is hoped that members will generally attend, and that the Association will be largely increased by new memberships. Our friends in Boston expect this, and will, doubtless, make our visit one of pleasure, socially as well as intellectually; in short, will make it an occasion to be remembered, as is our last visit—just ten years ago—to that hospitable city.

Information, concerning the meeting and further arrangements made, may be obtained by addressing the permanent secretary, Prof. J. M. Maisch, No. 145 North Tenth street, Philadelphia, Pa.

C. LEWIS DIEHL, *President.*

LOUISVILLE, KY., June, 1875.

GRAINS DE SANTE.—The *American Druggists' Circular* gives the following formula for *grains de sante*, from Cadet:

Aloes	100 grains.
Jalap	100 "
Rhubarb	25 "
Syrup of wormwood, sufficient.	

Divide into two-grain granules, which are to be silvered. Dose, one to ten, before meals.

EDITORIAL.

TO PHARMACISTS AND DRUGGISTS.

"The traffic in patent and proprietary medicines has gradually assumed such dimensions, that, according to reliable statistics, two-thirds of the quantity of medicines annually consumed in the United States are dispensed in the form of nostrums.

"The consequences are: Damage to the true interest both of the public and the profession; injury to health and life induced by the unadvised and reckless use of medicines; non-recourse by the people to qualified practitioners and pharmacists; and, lastly, the fostering of morbid habits of constant and excessive dosing.

"Another ruinous effect of the nostrum traffic is a deterioration in the practice and drift of the legitimate drug trade, by the diversion therefrom of a large amount of capital and instructive labor into the nostrum trade, and the consequent withdrawal of both from pharmacy proper.

"Beyond their profuse advertising, the nostrum manufacturers have adroitly made the pharmacist and druggist their middlemen, by a lavish supply of *almanacs for gratuitous distribution*. The name and business card of the druggist are printed on the cover, by which these almanacs (issued and furnished solely in the interest of the nostrum-maker) carry the apparent indorsement of the distributor, and become, mainly through him, a most efficient advertisement of nostrums as well as a stimulus to their demand and use.

"The necessity of encountering this imposition, and the unlimited mischief caused thereby, has forced itself upon the attention of the educated public as well as upon that of all high-principled members of medical and pharmaceutical professions. Both the public feeling and the true interest of the profession point to the pharmacists and druggists themselves as the proper correctors of this evil.

"Among the expedients devised, that suggested by Dr. Frederick Hoffmann (THE PHARMACIST, 1874, p. 321,) has met with unqualified approval. It is that the pharmacists and retail druggists, without absolutely abandoning the sale of patent medicines, at least withdraw their aid from the nostrum manufacturers by declining the indiscriminate distribution of their advertising almanacs, and, since the public are accustomed to get such from the drug store, by introducing in their stead an almanac both creditable to the giver and useful to the public.

"For such an almanac Dr. Hoffmann suggests the following chief subject-matter: The annual astronomical calendar; postal rates etc.; statistical and general information on health matters and requirements; a series of simple and approved household remedies; brief directions for the prompt application of antidotes to the common poisons in daily use in domestic economy, and in the arts and trades; first help in accidents and emergencies; brief popular essays on the origin and absurdities of the nostrum traffic; a statement of the composition of all those patent and proprietary medicines used in the United States, which have been analyzed.

"Upon this suggestion, coming from such an acknowledged authority, the undersigned has decided upon the publication of an annual small almanac, under the copyrighted title of '*Popular Health Almanac*,' and is pleased to be able to announce that Dr. Frederick Hoffmann has consented to accept the editorship of the same.

"It is clear, from the above programme, that this almanac will be an eminently practical and timely publication, which, by its intrinsic practical value to every household, will at once find favor over the nostrum-maker's calendar. The public, too, will no doubt show their appreciation of this step by patronizing such druggists and pharmacists as distribute this almanac to the exclusion of the nostrum-maker's. This much needed work is undertaken by the editor and publisher chiefly with a view to benefit the public, and to encourage and assist all high-minded pharmacists and druggists in the legitimate endeavor to check the mischievous spread of the nostrum traffic, and in maintaining the honorable character of pharmacy, inasmuch as it is not anticipated that the '*Popular Health Almanac*' will, for some time, pay expenses. It is confidently expected, however, that, in consulting their true interest, pharmacists and druggists will avail themselves of this opportunity, and order sufficient numbers of the '*Popular Health Almanac*' for distribution among their customers.

"This will be a neatly printed pamphlet of 32 duodecimo pages, the cover will be of tinted paper, bearing on the front page the card of the pharmacist or druggist issuing the almanac; it will be issued for the first time in the early part of this fall.

"June, 1875. "E. STEIGER, *Publisher*,
22 and 24 Frankfort Street, NEW YORK."

In presenting to our readers the above circular, it is with the purpose of aiding a project which has our hearty indorsement, and we trust it may receive the pecuniary as well as the ethical support of the profession at large. The publisher of the proposed almanac certainly presents the subject to the drug trade in a very tangible form, and it will become the pharmacal profession to take advantage of this unusual offer on the part of Mr. Steiger, and accept his proffered aid to combat the "nostrum evil" with one of the most powerful weapons, "*printers' ink*," with which it has made such an encroachment upon legitimate pharmacy, so that its power has seemingly become omnipotent, and its evil influence has assumed such a contagious magnitude that but few in the profession have remained free from the web of collusion in which pharmacy of the present day has become entangled. The allurements of the bait, "*free advertisement*," has been the great temptation which constantly is held out by proprietors of nostrums to the professional trade, and there are but few who resist. That the proprietors of nostrums fully appreciate the aid extended them by the drug trade is very perceptible, from the fact that no pains are spared by them to amply supply each and every "pharmacy" throughout the land with an annual stock of almanacs, recipe books, circulars, etc., coupling with it the hope that the same may be judiciously distributed to the great public, who, by the perusal of this trashy literature, is easily induced to purchase the nostrums. The bulk of the money thus obtained, "under false pretenses," naturally finds its way into the coffers of the nostrum proprietor, and he, in a short space of time, thereby becomes in wealth the nabob of the land, while his "helper," the pharmacist, remains a poor, obscure individual, who is necessarily satisfied if, by sixteen hours of hard work each day, he realizes just sufficient to keep body and soul together, and thereby keeps the wolf at bay.

Is there a remedy for this "*nostrum cancer*," which is gnawing at the very vitals of legitimate pharmacy? There is, and the publisher of the proposed POPULAR HEALTH ALMANAC offers us a remedy which is not alone a potent one for the malady, but an unusually acceptable as well as useful Samaritan gift to the people for whom it is to be compounded, and dispensed by no less a personage than that of Dr. Frederick Hoffmann, who first suggested the use of this remedy in the pages of the PHARMACIST (Vol. VII., p. 321). In addition to the publication and general free distribution of this almanac, let us take a circumspection of ourselves and our premises, and see whether we can assist the proposed treatment of the malady by some of the old-fashioned household remedies.

In anticipation of the presence of a large number of visitors at the celebration of our centennial birth-day as a nation, it will certainly become us as hosts to set our household in order, and in commencing the work of house-cleaning, let us take down the *glaring signs* commemorating some miraculous humbug, and usually found adorning prominent spaces in our places of business. Let us place in the vacant space produced by the removal of this "nostrum poster," the diploma or certificate of membership of some college of pharmacy or pharmacal society. Let us remove out of sight the nostrums which usually line the most conspicuous sections of our shelving. They can easily be placed under the counters or in cupboards, and when thus kept in the dark they are not as liable to become injured by the *action of the light*. Let us not make any unjust discrimination between a nostrum because it is the invention of a *yesterday's* cobbler or journeyman tailor, and that of the more pretentious humbug and impostor who lays claim to a professional standing, be that either a medical or pharmacal one. This latter class are the greatest frauds, and are to be looked upon as the most dangerous to the best interest of pharmacy. They employ "printers' ink" more largely than those who issue an annual almanac, recipe book, etc. They generally publish a monthly or quarterly advertising sheet, which has been dubbed with a technical name having some general allusion to the profession, and in this publication they are constantly setting forth their claims to a superior knowledge to that of any other human mortal who is an inhabitant of the universe with themselves.

They also set forth the claims that their nostrums are the sole productions of most intricate manipulations, which can only be carried out with the most elaborate and costly machinery, such as vacuum pans, etc., when in reality such "vacuums" only exist in the craniums of those dupes who take stock in the wares and merchandise put forth by such nostrum factories.

CHICAGO COLLEGE OF PHARMACY.

By reference to the annual announcement of the Chicago College of Pharmacy, published elsewhere in this number of the PHARMACIST, it will be noticed that there has been a change in the chair of Materia Medica. Prof. H. D. Garrison has been appointed by the Board of Trustees to this important position, and they, as well as the students who are to attend lectures, and the entire college, are to be congratulated upon the accession to the faculty of one so eminently qualified for the place. Prof. Garrison has had a large practical experience in handling drugs, and has been a teacher of materia medica and chemistry for many years. This appointment will very materially strengthen the faculty; and it is, as at present constituted, very strong and complete. The other chairs are filled with gentlemen of high order of ability and large practical experience; and the college now offers, to those who are seeking a pharmaceutical education, talent of the highest order, and every facility for practical demonstrations and illustrations.

The course of lectures begins on Friday, October 1st. With the low rates of board to be obtained, the great facilities offered for reaching Chicago, and the probability of getting employment during the lecture term, which will pay at least a part of the expense, there is very little excuse, for the average young druggist, for not fully fitting himself for the profession of his choice.

CORRESPONDENCE.

Editor of THE PHARMACIST:

I would be pleased if you would publish, in the next number of the PHARMACIST, the formula (of "Candidus," of Mobile,) for preparing elixir of taraxacum. I believe it was published some some five years ago, in the proceedings of the American Pharmaceutical Association. I, like many other readers of your journal, would be glad to see it in print again. Respectfully, L. E. SALE.

RICHMOND, VA., June 14, 1875.

The formula for this elixir was published in the PHARMACIST, vol. iii., page 60; but, as we are always ready to please our readers, we will republish the same, although it costs us an effort to do so, as we have always considered this formula a conglomeration of the quintessence of the elixir—nonsense; and what is most ridiculous, is the fact that it is extensively prescribed by the medical profession, when as simple a preparation as the fluid extract or syrup of licorice would better answer the purpose of masking the bitter taste of quinine.

COMPOUND ELIXIR OF TARAXACUM (*Candidus*).

Take of	Dandelion	6 troy ounces,
	Wild cherry	4 try ounces,
	Orange peel	2 troy ounces,
	Licorice root	of each 1 troy ounce,
	Gentian	
	Cinnamon	
	Coriander	

Cardamom	of each 2 drachms,
Caraway	
Anise	
Syrup	2½ pints,

Alcohol and water, in the proportion of one of the former to three of the latter—a sufficient quantity.

The dry ingredients must be reduced to a suitable degree of fineness for percolation. Mix the alcohol and water; moisten the powder with six fluid ounces of the mixture; then pack in a conical percolator, and pour on of the alcoholic mixture until six and one-half pints are obtained; then add the syrup, and mix them.

We do not often advise "short cuts" in making preparations for which a formula has been published and accepted; but in this case we are tempted to offer such a one:

Take of Fluid extract of dandelion	6 fld. drs.
" " orange peel	2 fld. drs.
" " liquorice root	of each 1 fld. dr.
" " gentian	
Tincture of cinnamon	1½ fld. ozs.
" cardamom	½ fld. oz.
Oil of anise	of each 1 drop.
" caraway	
Alcohol	3½ fld. ozs.
Syrup of wild cherry	4 fld. ozs.
Water	sufficient quantity.

Dissolve the oils in the alcohol; add the tinctures, fluid extracts and syrup of wild cherry, and at last sufficient quantity of water to make the liquid measure a pint.

We have received the following communication from a valued correspondent residing in the Southwest:

MR. ALBERT E. EBERT.

Dear Sir: Please accept my thanks for the investigation and exposure of the nostrum "cincho-quinine," which will, I trust, put a quietus on frauds. As Messrs. Billings, Clapp & Co. seem disposed to show fight, perhaps it might furnish some interesting "reading" to publish an examination of some of their other preparations said to contain quinia, such as *citrate of iron and quinia*, *syrup of phosphate of iron, quinia and strychnia*, etc. Yours truly, J. P. B.

Editor of THE PHARMACIST:

Will you please inform your readers whether or not there is any *hypophosphite of iron* in the compound syrup of the hypophosphites prepared by Billings, Clapp & Co., Boston, and by them so stated upon the label. If so, please state by what process or test the same can be detected. Respectfully, TOLEDO.

[Iron is not considered an ingredient of this syrup, and should not be dispensed unless ordered by the prescriber. When so desired, it is readily added, by dissolving three-fourths of a grain of hypophosphite of iron in a small quantity of hypophosphorous acid, and mixing it with each fluid drachm of the syrup. Having lacked confidence in the articles furnished by Messrs. J. R. Nichols & Co., or their successors, Billings, Clapp & Co., we have never bought or sold their merchandise, and, therefore, are not familiar with the preparation in question. Should, however, our inquirer wish to satisfy himself whether or not there is *a trace* of iron present in the preparation, he can easily determine this fact, by diluting the syrup with equal parts of diluted hydrochloric acid, (free from iron,) and adding a solution of ferrocyanide of potassium. If iron is present, in the state of a ferric salt, a blue coloration will result.—EDITOR.]

Editor of THE PHARMACIST:

I am pleased to see the gentlemanly, but decided, position you have taken in reference to cincho-quinine, and hope that gradually even the medical profession may come to the same conclusion. I am sure that ultimately your honest position will prove to be also good policy, for I have confidence that truth will prevail, though fraud may make a hard fight. The greatest difficulty seems to arise from the ignorance (and consequent credulity) of many of our own profession, and perhaps still more from the same evils among physicians. I find that very many doctors are imposed upon by the show of scientific knowledge flourished before their eyes in the *Boston Journal of Chemistry* and *Tilden's Monthly*, (*par nobile fratrum*,) so as to accept their *dicta* almost without questioning.

While on the quinine question, can you tell me, or tell the profession, through the PHARMACIST, whether any careful analysis has ever been made of the "hospital quinine" of the manufacturers, so as to indicate how it compares, in efficiency and in composition, with the bleached sulphate?

Respectfully, M. S. B.

[We know of no published examination of hospital quinine; but have heard it frequently stated by members of the "craft" that it was equal to the commercial sulphate in medicinal properties. Can any of our readers give us more light on the subject?—EDITOR.]

REVIEWS AND BOOK NOTICES.

Catalogue and Annual Report of the Illinois Industrial University, for 1875. Champaign, Illinois.

In perusing this report, we have been gratified to learn that there exists such an institution of learning in the State of Illinois; and what is the more remarkable is the fact, that the same is not alone in successful operation, but in a most flourishing and healthy condition. The university was founded in 1867, by the United States and Illinois State Governments, and formally opened March, 1868. When we take into consideration what has been accomplished in the short lapse of time since its inauguration, we are agreeably surprised at the ample provisions made in the way of buildings, grounds, stock, apparatus, and other conveniences necessary for the practical illustration of the different branches taught in the institution, which comprise departments of agriculture, horticulture, mechanical, civil and mining engineering, architecture, chemistry, natural history, language and literature, military, commercial and domestic science and art, etc., it certainly speaks well for its management; and the public may congratulate itself in having secured the services of Prof. J. M. Gregory as its Regent, who has proven himself so able a manager. That he has the assistance of an able corps of teachers we would judge from the reputation that some whom we know have in the scientific world. A late appointment in the faculty is that of H. A. Weber, Ph. D., to the chair of Professor of Chemistry. Having some intimate knowledge of Professor Weber's abilities, we congratulate the university in this additional acquisition of so qualified a member to its faculty. The university being designed for young men and women who are desirous of obtaining a liberal education relating to agriculture and the mechanical arts, or a scientific training having a bearing to the arts and manufacture, or a classical scholarship, we would advise all who are in search of such instruction to enter the portals of this university, and there imbibe at the fountain head of learning such knowledge as seems most desirable by each individual, for a successful struggle in the battle of life.

The tuition is free in all branches of the university. This has been provided by the bounty of a liberal country and government, so that all can drink who thirst after knowledge. The fall term commences September 14th, 1875. Information can be obtained by addressing Prof. T. J. Burrill, Corresponding Secretary, Illinois Industrial University, Champaign, Ill.

Circulars of Information of the Bureau of Education.

No. 1.—Proceedings of the Department of Superintendence of the National Educational Association at Washington, D. C., January 27 and 28, 1875.

No. 2.—Education in Japan. Washington, D. C., 1875.

Fifth Report of the Board of Commissioners of the Cincinnati Industrial Exposition, 1874.

Rules and Premium List of the Cincinnati Industrial Exposition for 1875.

A feature is to be introduced, for this coming exposition, which will commend itself to the inventor as well as the public at large. It has been decided that, in the exposition of the present year, all the machinery exhibited and entered for competition will be subjected to such tests as will develop the leading characteristics of each machine, and be alike beneficial and instructive to the successful competitor and less fortunate rivals. Machines not entered for competition will also be critically examined, and reported upon in the Annual Report. Large premiums in gold are offered in important classes, and the tests of machinery will be conducted by experts of national reputation, who have been already chosen.

THE PHARMACIST.

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EXAMINATION OF SO-CALLED "*ENGLISH STYLE*" CITRATE OF IRON AND QUINIA.

BY L. C. HOGAN.

The only incentive which prompted me to take up this "scaly" subject for examination, was the communication of J. P. B., in the July number of THE PHARMACIST, wherein he "hinted" that among the different preparations of QUINIA, as put upon the market by the proprietors of the notorious nostrum "cincho-quinine," "there was a nigger in the wood pile," accordingly I prepared to dislodge him. A number of original bottles of citrate of iron and quinia, bearing the label and seal of the manufacturers, were purchased in the open market, and each specimen was subjected to the following process for the quantitative determination of the per cent. of quinia it contained:

Fifty grains of the citrate of iron and quinia were dissolved in one fluid ounce of cold distilled water, and sufficient ammonia added, until there was a slight excess of the alkali. The mixture was allowed to stand at rest for several hours. The precipitate which had been produced was collected upon a tared filter, washed with a small quantity of water containing a little ammonia, and carefully dried by aid of a water bath. Three assays were made of each specimen examined, and the following is the average yield of each specimen:

50 grains of specimen No. 1 yielded 1·35 grains, or equal to 2.70 per cent. of quinia.
50 " " " No. 2 " 2 " " " " 4.00 " " "
50 " " " No. 3 " 2·56 " " " " 5.12 " " "

The citrate of iron and quinia salt was next exposed to a red heat upon platinum-foil, whereby it was incinerated, leaving about twenty per cent. of the mixed oxides of iron.

On comparing the results obtained by the examinations, with the requirements of the U. S. and British standards, my first impulse was to accuse the manufacturers with intentional fraud, as I took for granted that the designation "English style," attached to each specimen of the preparation examined, was intended to infer that it was prepared according to the process and standard of the British Pharmacopœia, which, like that of the U. S., required the salt to contain sixteen per cent. of the alkaloid quinia; but, on further reflection, I remembered that "there are tricks in all trades but ours;" and as the nostrums of this house have of late been unusually loudly proclaimed as having an "unblemished character," I was led to believe that the words "English style" might be an ambiguous appellation, and have no reference whatever to the pharmacopœial authority of Great Britain. On making some investigations in this direction, I came upon a "descriptive catalogue" issued to the trade some time ago by this house, wherein the following statement is made concerning this preparation: "IRON CITRATE AND QUINIA, *the formula we adopt is that of the most reputable English manufacturers.*" This is what might be styled rather rough on reputable English manufacturers, if the standard adopted by this nostrum house is a close imitation of English productions. If not true, it is "Yankee cheek," and a malicious libel upon honest manufacturers, and therefore the lash of the law should be applied to these nostrum makers, without mercy.

GLYCERIN: ITS ORIGIN AND HISTORY.*

BY F. M. GOODMAN.

The name glycerin is derived from a Greek word, *glycys*, signifying sweet. It was Chevreul who termed it the sweet principle of oils.

It is said that it was discovered by Scheele in 1789, but, as Mr. Benger remarks, "there is considerable discrepancy in dates. Watts says 1776, some 1782–3, Abbotts Smith 1789; but the fact that Scheele published his discovery in the Transactions of the Royal Academy of Sweden, in 1783, seems to prove the latter date erroneous."

To the French chemist, Chevreul, while investigating the subject of fats in connection with candle-making, (about 1830) belongs the honor of having first found out the true chemical relation of this substance to the oils from which it, obtained. Although it is said that Scheele discovered it, it must have been produced, though unnoticed, as soon as soap was made, which was unknown to the ancient Greeks, and to the Romans until Pliny's time (about A. D. 23), and then only as a pomade for the hair, which was probably introduced from Germany; and, as far as the writer is able to find, was made in a similar manner to that of the present time, "it being prepared from tallow and ashes;" therefore it is evident that all the glycerin produced during 1800 years went to waste. In 1844 Mr. T. De La Rue procured some from Mr. Warrington, of Apothecaries Hall, London, and tried its effect upon burns and irritation of the skin. The effect was very soothing in keeping the parts moist. He suggested the use of it to Mr. Startin, through whom it was introduced into the hospital for diseases of the skin, and from this time on, it came into use as an external application to chapped hands, lips, etc., and for toilet purposes. This general demand induced manufacturers to produce glycerin in a purer condition than heretofore, which having been but a by-product in the manufacture of soap, lead plaster and candles, was largely contaminated with the salts of lead, lime and other impurities. To this end sulphuric acid was used in place of the lime saponification, the acid combining with the whole of the fatty substances, and the glycerin being isolated in the form of sulphoglyceric acid, which, after an addition of water and the application of a high temperature is distilled. This process was in general use prior to 1853, at which time Scharling observed that neutral fats were decomposed by the action of superheated steam. This observation was successfully carried out by introducing into a distillatory apparatus, containing a quantity of palm oil, steam under great pressure, at a temperature of from 550° to 600°. Here the fat acids take up their equivalents of water. The glycerin also combines with an equivalent of water, and the whole distills over together, and the condensed glycerin, from its greater specific gravity, sinks below the fat acids in the receiver. These improvements were adopted by the Price's Candle Co., London, who were the first, I believe, to manufacture it in large quantities.

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* Abstract from a paper read before the annual meeting of the Alumni Association of the Chicago College of Pharmacy.

On January 9, 1854, a patent was granted R. A. Tilghman, of Philadelphia, "for improvements in treating fatty and oily matters, chiefly applicable to the manufacture of soap, candles and glycerin." In regard to the process, I cannot do better than to employ the inventor's description, which is briefly thus: "The first part of my said invention consists in a mode or modes of obtaining free fat acids and solution of glycerin from those fatty or oily bodies of animal and vegetable origin, which contains glycerin as their base. For this purpose I subject these fatty or oily bodies to the action of water, at a high temperature under pressure, so as to cause the elements of those bodies to combine with water, and obtain at the same time free fat acids and solution of glycerin. I mix the fatty body to be operated upon with from a third to a half of its bulk of water. The mixture may be placed in any convenient vessel in which it can be subjected to the action of heat to a temperature about the same as melting lead," (which is 617°) "until the operation is complete, and the vessel must be closed so that the requisite amount of pressure may be applied to prevent the conversion of water into steam."

The principle is that of Scharling's, but the application is different. Scharling used steam and pressure; Tilghman uses water, which is converted into steam, producing pressure and distillation in both cases—Scharling's in a distillatory apparatus; Tilghman's in a perpendicular coil of pipe, through which it is forced by a piston which also acts as an emulsifier of fatty material in the hot water, heat being applied to the lower part of this coil of pipe, which sets into the top of a furnace. By this means the contents of the coil is raised to a temperature of from 500° to 600°, and a pressure of about 2000 pounds to the square inch. The hot mixture of fat acids and solution of glycerin, which escape from the exit valve, are separated from each other by subsidence. The temperature must not much exceed 600°, for above that the glycerin is readily decomposed.

In 1854 or '55, Mr. Tilghman sold the above mentioned patent to the Price's Candle Company, who still manufacture it by this process.

In 1860, Mr. Wiegand called attention to the American glycerin, of Bower's manufacture, as "being equal if not superior to Price's, and at less cost," and this is probably, at the present, as pure as any in the market.

Glycerin does not solidify at —35°, though in 1867 Mr. Crookes speaks of a large quantity solidifying while on a voyage from a factory in Germany to London. He suggests that the vibration of the mass while on the railway, aided by cold weather, might have been the cause of its solidifying. Upon examination he found it quite pure, and after melting would not solidify even at a very low temperature.

At the Vienna Exposition, in 1873, a sample of crystallized glycerin was on exhibition. This must have been an interesting chemical curiosity, but being prepared by a patent process its method of manufacture remains a secret.

Pure glycerin, if exposed to the air, will not absorb oxygen, but will absorb about half its weight of water. On this depends its property of not becoming rancid.

As regards the use of glycerin, I will quote Mr. Remington's remarks from the *American Journal of Pharmacy*, 1870. He says: "It serves its mission as faithfully on the dressing table of a lady as it does in our gas meters; as well as an excipient for pill masses as it does a substitute for molasses in printers' rollers, and its range of application between these extremes is varied and extensive."

LABORATORY NOTES.

BY A. B. LYONS, M. D.

IMPURE SODIUM PHOSPHATE.—I have recently met with a specimen of phosphate of soda, bearing the label of a reputable American manufacturing house, containing a large percentage of sulphate of soda. The salt had a suspicious appearance at first sight, being imperfectly granulated, as if obtained by simply evaporating the mother liquor to dryness. It dissolves completely in twelve times its weight of cold water, whereas pure crystallized sodium phosphate requires at least sixteen times its weight. Exposed to a moderate heat, till it ceased to lose weight, it gave up barely 25 per cent. of its weight of water of crystallization, whereas sodium phosphate contains 60 per cent. On ignition there was a further loss of weight, amounting to about 2 per cent.; anhydrous sodium (hydrodisodic) phosphate would lose more than twice that quantity of basic water.

A solution of the salt in water yielded, after the addition of hydrochloric acid, an abundant precipitate with barium chloride. By a rough volumetric estimation, the amount of sulphuric acid (H_2SO_4) was found to be about 27 per cent. of the entire weight of the salt. The salt, therefore, deprived of what remains of its water of crystallization, contains more than half its weight of sodium sulphate.—*Detroit Review of Medicine and Pharmacy.*

FOR STAINING WOOD A MAHOGANY COLOR.—Wash with diluted nitric acid (ten parts of water to one part of nitric acid). For rosewood, glaze the same with carmine or Munich lake. Asphaltum, thinned with turpentine, forms an excellent mahogany color for new work.

SNOW-WHITE SALICYLIC ACID.

BY DR. AUG. RAUTERT.

It is well known that the salicylic acid prepared by Kolbe's process does not possess a pure white color, but is more or less yellow. The salicylic acid manufactured and furnished to the trade by Dr. F. von Heyden, in Dresden, according to the above patent, is a whitish powder with a strongly yellow hue, from which by recrystallization tolerably colored crystals are obtained. Kolbe himself says that, in order to obtain snow-white salicylic acid, the crude acid should be converted into an ether by the usual method, and this again decomposed by caustic soda, and so on. However, the boiling point of the ethylic as well as the methylic ether is so high that at this temperature a portion of the salicylic acid begins to decompose. For my part, I have never succeeded in obtaining in this way more than one-fourth, of the quantity of salicylic acid originally employed, in the form of a chemically pure product.

As the use of salicylic acid, for medicinal and surgical purposes, is continually increasing, a method of purification, whereby the yield is much larger, and almost the entire quantity of salicylic acid present can be separated from its colored impurities with little trouble and at a small expense, will be welcome. Salicylic acid, we know, can not be sublimed without decomposition. It splits up into carbonic and carbolic acids. On the other hand, salicylic acid volatilizes in a space filled with any gas or vapor at a temperature far below its boiling point, and even far below its melting point. If the vapor from a boiling aqueous solution of salicylic acid be condensed, it readily gives the reaction of this acid; and if salicylic acid is exposed to a current of air heated to 212° Fah., it rapidly loses weight.

I made use of this phenomenon in the process here described for the preparation of pure salicylic acid, and found, after many unsuccessful experiments, that superheated steam was best adapted to the distillation of salicylic acid. For this purpose I had made a little double-walled copper boiler, by placing two copper tubes of unequal diameter, one within the other, and closing the ends with plates of copper soldered with hard solder. The space between the two tubes was fill through a suitable opening with melted paraffin, and in this opening was placed a thermometer so that I could continually observe the temperature. The interior of this double boiler held the crude salicylic acid, and to the highest part was attached two tubes. One tube served to introduce the superheated steam; through the other the boiler was filled with crude salicylic acid, and it afterwards served as exit for the steam laden with acid. This tube should have a diameter of at least 0·6 inch, because otherwise it is easily stopped up by the escaping salicylic acid. The double-walled boiler used in my experiments was so large that I could operate on about as much as two pounds of crude acid at one time. To the last mentioned tube of at least 0·6 inch diameter, is attached a straight tin tube of the same width, passing through a Liebig's condenser and kept always cold. On the upper end of the tin tube, where it is connected with the copper boiler, a small lead tube with a funnel is soldered on; and through this, cold distilled water is allowed to drop continually during the distillation.

When the apparatus is all arranged, the boiler is heated until the thermometer in the paraffin marks 338° Fah. Superheated steam at 338° Fah. is allowed to enter the interior space through the narrower tube. This steam is generated in a glass flask of 3⅔ pints capacity, and is superheated by passing it through a long thin lead pipe coiled in an iron pot containing paraffin, which is heated to 338° Fah. As soon as the crude salicylic acid has acquired the temperature of the surrounding paraffin, which always takes some time, its distillation begins, the acid passing off with the accompanying steam so rapidly that the tin tube would be stopped up very soon, in spite of the continually dropping water, unless the pipe is continually cleared by means of a glass tube, or, better still, a split stick of well boiled pine wood, which reaches all the way to the boiler. The salicylic acid appears at the lower end of the tin cooling pipe as a thick magma of snow-white color, and is caught in a beaker glass placed under it. At the close of the operation the temperature of both paraffin baths is raised to 365° Fah. In about two hours the operation is finished. Only a slight black resinous residue remains in the boiler. The salicylic acid which goes over has only a slight odor of carbolic acid. By pressing out the crystalline mass, boiling it in distilled water, and recrystallizing, it is easily freed from the carbolic acid. By recrystallization from distilled water (well water, or a filter which has not been washed with hydrochloric acid, contains enough iron to impart to it a reddish color), it can be obtained in beautiful, absolutely white crystals. One must not neglect to carefully clean the tin tube with ether before beginning the operation, to remove the grease that always accompanies the manufacture.

In the manufacture on a large scale, high pressure steam could be substituted for the paraffin baths. In high pressure steam itself, employed directly, the salicylic acid scarcely distills at all. I tried, among other things, to distill the acid by the direct action of steam at a pressure of five atmospheres, at which pressure the temperature is 320° Fah., but did not succeed; the steam scarcely carried a trace of acid with it. Evidently the boiling point of the acid was correspondingly raised by the increased pressure. I conjecture that the distillation of salicylic acid under diminished pressure, say half an atmosphere, would take place still more readily.

I would further recommend a stirrer for the salicylic acid boiler, so as to give it more opportunity for contact with the vapor passing through it.—*Polytechniches Notizblatt.*

ANTAGONISM OF JABORANDI AND ATROPIA.—M. Vulpian has laid before the Academie de Medecine the result of his researches upon animals, showing the antagonism between these two drugs, and their inverse effect upon the biliary and pancreatic secretions.

Jaborandi excites these secretions actively, but an injection of sulphate of atropia causes their arrest, and the pancreatic fluid and bile are no longer observed to pass from the canulæ previously placed in the ductus choledochus and pancreaticus.—*Le Progres Medical,* No. 12, 1875.

QUACKS AND QUACKERY IN THE UNITED STATES.*

From medical journals, both domestic and British, recently come to hand, I see American quackery has been receiving a little attention of late on both sides of the Atlantic, and particularly in California. But what comes of all this talking and writing? Nothing. Quackery is not decreasing. It is as rampant as ever, and should be highly amusing as well as ridiculous, were it not fearfully vicious and even diabolical. No conception of the number of American quacks and their evil doings can be formed by those living in Ireland. To the one legitimate practitioner there are doubtless four or five quacks in every city and town in America. What I say of Chicago is also true of each and every city (it is the same everywhere); what I shall say of one quack will hold good for the entire brood of these blood-suckers, robbers and murderers.

Last summer one of the migrating species, named McBride, paid a flying visit to the Phœnix City. He was nearly six feet high, sallow complexion, small dark eyes, heavy black moustache; his hair reached as low down behind as the ridges of his scapulæ. Nor did he disdain the sweet, delicious luxury of a tobacco quid. He was about as thin and as straight as a fishing-rod. He dressed in shining black cloth, with spotless white vest, and wore a profusion of jewelry. This "bird of passage" rented a large store in the greatest thoroughfare in the city, and got the walls painted flesh color. Next, in large and prominent letters, were painted the words, "Dr. J. J. McBride's World's Relief;" while in brightest colors was printed what this "World's Relief" could do: "Cures neuralgia in three minutes, toothache in one minute, cholera in seven minutes, bloody flux in five minutes, and liver complaint in a day," and so with every disease in the nosology. Inside his "office" was piled from floor to ceiling with pamphlets and packages of his "World's Relief." Every day he drove about town a large wagonette, drawn by four gray horses gaudily caparisoned, and each with a huge red and white plume sticking up from his head. In the wagonnette was a brass band playing all the time, while from the rear of the vehicle a red flag, four feet wide by six feet long, and bearing the words "Dr. J. J. McBride," floated. Having made his circuit of the city after the fashion of any circus company, he returned to his "office," where he quietly fleeced his numerous victims. And here I will remark that, having traveled a great deal of the world, I find the Yankees, with all their boasted "smartness" and cleverness, are the most gullible of all the gullible people on the face of the earth. Nothing dazzles them and so completely throws them off their guard as great show, display, "cutting a dash," as they call it. A few months ago the dupe of one of these quacks was dying, and sent for a physician. It was then discovered that the man was being poisoned by kerosene oil, which he was taking in half pint doses, from one who styled himself the "Good Samaritan," and who advertised that the "blind see and the lame walk" (in the other world, I suppose,) by the use of "his remedy"—kerosene.

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* **As seen through the "emerald-green" spectacles of an Irish correspondent.—Ed. Ph.**

To all this buffoonery there is a sadly dark and serious side, for independent of the number poisoned and otherwise killed, these quacks are the notorious and detestable abortionists so plentifully met with in the United States, and so much called for. Thousands, yes, millions of infants, are yearly murdered by criminal abortion by these men. This shows forth most glaringly the shocking and awful depravity of American women, and men too. You are probably already aware that the Americans tolerate only one or two children at most. As soon as a wife discovers she is pregnant she either goes to the abortionist or sends for him, and without any more ado commits the abortion. These wretches commit such crimes publicly, and with bold effrontery. They make not the least secret of it. Some of them have actually announced their guilt in published pamphlets, in which the number of abortions committed by the author is stated. The Government is perfectly acquainted with all this, yet they walk unhung. Among this large and motley crowd of "dark and evil ways" must be classed most of the "female doctors." These are terrible-looking creatures—veritable witches, if such beings exist at all on this earth—and who do a thriving trade in abortion.

Chicago, with a population of 400,000, has about 1000 "doctors." (?) Only 372 of these are given in the local Medical Register as being "in good and regular standing," according to the Chicago Society of Physicians and Surgeons, a body of highly respectable and educated gentlemen, and under whose authority the said Register is published. This list of 372 includes those who have a very good professional training, as well as those who have only a very inferior education.

Chicago rejoices in the possession of two medical colleges. What authority they possess, and whence they derive it, to confer diplomas, I do not know; but I do know that only a very limited knowledge of medicine is acquired in these colleges, simply because their laws and rules are not enforced. As long as students see a "short-cut" from the beginning to the conclusion of their college studies, at the same time stifling conscience and ignoring any responsibility for loss caused by their ignorance, with no hope of redress in law by the injured parties, so long will students avail of this short way. This exactly is how the case stands in Chicago. The *curriculum* of these colleges is not enforced—students "*are recommended*" to follow it. Clinical study seems to be optional. Just a year ago I saw the name of one individual among those who took their M.D. whom I chanced to know as having spent only a *single session at study*. Very likely a small percentage of the students follow the curriculum. In diagnosis, and particularly in differentiation, these men make terrible mistakes, as the following will show: The writer has seen a case of lead-poisoning in which all the symptoms were well marked with the characteristic blue lines on the margins of the gums, unusually distinct, treated as typhoid fever. In a case of secondary cancer of the round ligament three of these men gravely discussed the propriety of plunging a bistoury into the tumour, believing it to be an abscess. In a case of ascites, under observation for a year and a half, the patient was left to burst or die from want of tapping. The fluid was making a spontaneous outlet at the umbilicus when the writer first tapped him. This trivial operation is terribly dreaded here. Cases of simple tonsillitis and ordidinary hoarseness are constantly called and treated as diphtheria and croup. Hence the supposed prevalence and successful treatment of these dread diseases in this city. In diseases of women "falling of the womb" is invariably the diagnosis and the shield behind which these men shelter themselves when perplexed.

Last summer a man died suddenly in the Illinois State Prison at Joilet. Some suspicion of foul play being entertained, an inquest was ordered. The resident physician (?) made, or attempted to make, a post-mortem examination, and found what he called a rupture of the heart. The heart was examined by a practitioner in Joliet, and then sent to Chicago, where four other medical men also examined the wound in the organ. Some of them said they examined it with the microscope, but how, I must leave you to imagine. Not one of the five could tell, or at least would not tell, whether the wound in the heart was a rupture or a clean cut. No blood was found in the pericardial sac—at least, nothing was said about it. On the coroner's inquest, however, the resident physician acknowledged he never studied medicine, that he had practiced dentistry for several years, and got appointed to the prison through influence (another name for bribery); that the retiring physician remained long enough in the prison after his resignation "to post him (the in-going man) in the plan of treatment." The truth is, this *highly educated physician* (?) not knowing where the heart was, sent his scalpel through it when opening the thorax! In a case of abortion ending in the death of the woman, committed about six months ago in Chicago by one Earll, the uterus was exhibited and examined at the inquest. The vagina was perforated in one or two places, and the uterus in several, by instruments. Two "doctors" testified that they could not say whether the holes in the vagina and uterus were natural ones or artificial! Here is something new for anatomists. Most of the "doctors" are "self-made," or were at least hospital servants or ambulance-helpers during the late war. In America no qualification is necessary to begin "practice." All that is necessary is to hang out a "shingle"—a sign-board with one's name on it.

The standing of the profession is not at all high. A large majority of its members have little or no honor and self-respect. When called in to a case, they will not inquire if there be a family physician, or any attendant, but forthwith prescribe, take their fee, and leave. In this way as many as four, and sometimes six, "doctors" prescribe for the same patient without seeing one another, and caring still less. This utter disregard for professional etiquette is taken advantage of by the public. Wishing for a consultation, but shrinking from the expense, they call in several physicians one after another, and get their opinions separately, and finally follow whichever opinion suits their fancy best.

The practice of taking commissions (percentage) on prescriptions is indulged in by most of the practitioners of this city. They send their prescriptions always, if possible, to the same drug-store. In order to compel the public to go to the druggist indicated, some physicians order medicines by means of preconcerted and private signs or marks. If the prescription is carried elsewhere the hieroglyphics are not understood, and you can not get the medicine. And this percentage is not deducted from the druggist's profits, but charged, in addition to the proper cost of the medicine, upon the purchaser. To such unprincipled conduct was traced the death of a child one night about last Christmas. I know one "doctor" now "retired," who, knowing no Latin, and not daring to prescribe in English—for then his patients would know as much as himself—was always obliged to go in person to the drug-store and whisper to the clerk what to give.

Such are the ways medicine is abused, disgraced, and brought into contempt, and medical gentlemen despised—looked down upon. They are greatly to blame for it themselves. There are in Chicago at least 200 doctors—gentlemen strictly and justly entitled to be so called—highly honorable and educated, and eminent in their profession. They are sufficiently numerous and influential to make thenselves heard and felt if they would but try, They seem to be quite.apathetic, and make no effort to purge the profession of "scalawags" by causing to be passed and enforced such rigorous laws as may be needed for that end. At least they could make an effort in this direction.

There is one thing to which I wish to draw particular attention—namely, a great desire to be considered British graduates, and the frequency with which men advertise themselves as such. This is done with the hope of speedily gaining practice, for the vast superiority of British Unversity education over American is well enough known to the public. Apothecaries have recourse to the same plan. Now the sooner this mean dodge is cried down and stopped, if possible, the better, for it must sooner or later bring disgrace on the exalted status of the medical profession in the United Kingdom. There is a man in Chicago generally believed to be a "Dublin doctor," but in reality holding a Philadelphia M. D., who has a certificate of attendance on the clinical instruction in the Meath Hospital, Dublin, and a certificate from the Dublin Lying-in Hospital, however obtained, publicly exposed in his office as British diplomas, in order to dupe the public into believing him a British graduate.

A few months ago a man in Dumfriesshire was fined for appending his name, as a physician, to a certificate of death. He produced a diploma from the "Livingstone University, in America"—wherever that may be, in Patagonia, perhaps!—and one from the "Edinburgh University of Chicago." *There is no such institution in Chicago.* "Degrees in America are as plentiful as mushrooms," as the *Lancet* well remarked, and are freely bought and sold whenever desired. The Dumfriesshire man illustrates this point also. Nay, more. The "University of Philadelphia" would not seem to be guiltless on this score, for it was caught last summer selling diplomas, and a prosecution ordered. But as I have seen nothing of it since, I presume hush-money was liberally called into requisition.

"PERSONAL—Wanted, the address of some Doctors' Widows having their Diplomas" is a copy of an advertisement in my posession. This is one plan of obtaining a hold of qualifications.—*The Dublin Medical Press and Circular.*

SYNTHESIS OF THERPYLENE.—Some time ago M. Berthelot published investigations in which he showed that the essence of turpentine, represented by the formulæ $C_{20}H_{16}$, resulted from the condensation of a special carburet, $C_{10}H_8$. This last, termed therpylene, no one has ever seen until the present time, when M. Bouchardat announces that he has produced it by synthesis.

A FEW WORDS FROM THE FAR EAST ON OPIUM.

BY T. H. BATEMAN, PH.C.

Some of the details in the following notes will doubtless be familiar to most readers, especially to those who take an interest in the manner dwellers in the far East use the drug. Opium has been used as a medicine from the earliest ages, but the date of its being resorted to as a luxury is somewhat doubtful, though it is not at all improbable that it was coeval with its employment in medicine. As connected with a national vice it was not known until the spread of Islamism, when wine and fermented liquors being prohibited, in accordance with the teaching of the prophet, it came to be used in their stead together with bhang, coffee and tobacco. The inhabitants of the Eastern Archipelago most probably imbibed their predilection for opium from the Arabs, although the particular manner of useing it has been derived from the Chinese.

Notwithstanding that the consumption of opium in China is considerable, I think the number of debouchees would compare favorably with the number of drunkards in other countries. From my own observations I feel convinced that in a climate like that of China, the drug in some form or other is a necessity. In the summer months diarrhœa and cholera are rife in the crowded, filthy, and ill-drained cities, and I have been frequently informed by the Chinese that a few whiffs from an opium pipe quickly dispel the sharp attacks of pain to which they are subject. In my occasional walks through Shanghai and its environs I have failed to discover (as described by one or two highly colored articles found in the pages of some English monthly serials) groups of emaciated wretches lying or sitting about the doors of opium shops. The consumption of the drug in China is large; but then the inhabitants are countless myriads, numbers of whom use the opium pipe as we do the tobacco pipe, namely, as a solace. Would it not be more desirable if the "quasi-philanthropy" at present engaged in "worrying up" the "opium trade in China" would expend some of its superfluous energies at home? Surely, the neighborhoods of St. Giles, Whitechapel and similar dens of vice in every form, afford ample scope. "Ea sub oculis posita negligimus: proximorum incuriosi, longinqua sectamur."

The great bulk of Indian opium finds its way to China, but a few thousand chests meet with a ready market in the Straits Settlements. The mode in which opium sales are conducted in this port (Shanghai) and the manner in which it is stored is as follows: On arrival it is received by some of the officers of the storage ships and placed on board, being held to the order of the various owners. Patna opium being prepared under the supervision of the British Government, it is never deemed necessary by the native brokers to cut or sample it. The price being settled between the merchant and buyer, the vender gives an order to deliver the number of chests as arranged; this order, being duly stamped by the Customs authorities, is presented to the official in charge of the receiving ship, and the drug is handed over without any further ceremony.

Malwa opium, however, is treated very differently. An order to inspect so many chests is presented with the price attached thereto; should the quality meet the approval of the purchaser, and the bargain be concluded, each chest is opened and three balls are chosen by the broker or buyer, as the case may be, and from each ball one-third is cut as a sample; these cuttings are then boiled down to test the quality more fully, and to prove to what extent adulteration has taken place. It is by no means uncommon to find sand added to increase the weight, in some instances to so great an extent that buyers refuse to take the opium, and cancel their bargain. After the cutting and weighing is completed it is again repacked, and the net weight marked on each chest, and as a further safeguard to the new owners a strip of paper, on which is printed the Chinese firm's name, is pasted on the top and bottom of each end of the chest. It is now ready for delivery, and is taken away in large or small quantities, as may be most convienient, subject always, however, to the pleasure of the Maritime Customs.

The amount of opium cultivated in China is small compared to that imported, but the native drug cannot be smoked without previous admixture with the foreign, as it causes some affection of the skin, the nature of which is unknown to me. Frequent edicts are issued from the throne against its culture on pain of forfeiture of land, and imprisonment. This difficulty is overcome by a little judicious "palm greasing" to the local mandarins. I have by me at present a specimen of the native drug from the Szechuan Province. Its external appearance presents none of the characteristics of either Malwa or Patna opium, it being hard, somewhat brittle, and without "odor." In fact, it closely resembles a specimen of opium from Gipps' Land which I had the opportunity of examining whilst at 338 Oxford street. The average yield of morphia in native opium is 1·5 per cent., although some authorities (!!) state the yield to be 6 or even 8 per cent.; a sample containing such a percentage as the latter has never unfortunately fallen into my hands.—*Lond. Pharm. Journal.*

HINTS ON THE STORAGE OF DRUGS.

Cantharis—Ergotæ.—If kept in a bottle half full, and shaken up from the bottom once a week, the growth of insects will be prevented.

Carbo Ligni should be carefully excluded from the air, as its medicinal value depends largely upon its antiseptic and absorbent properties.

Confectio Sennæ should be kept in a very dry but cold place, to prevent fermentation.

Ferri et Ammon Cit.—Ferri et Quiniæ Citras.—The scale preparations should not be exposed to strong light, and are best kept in *tightly corked* bottles, with perfectly round necks, and a piece of gutta percha tissue under the corks.

Anthemis should not be kept in a warm or too dry place, as they lose their aroma and fall to pieces at the least touch, if made too dry.

Ammonia Acetatis should never be kept in white bottles, as it dissolves the lead which is generally present in white glass.

Ol. Limonis—Ol. Bergamotte.—The stock of these articles should be kept in a dark and cool place, and only a small bottle kept for use; *all essential oils are better kept from the light.*

Oleum Amygdalæ Dulc—Oleum Morrhuæ—Oleum Ricini (*Italian*).—These oils, and especially the fine varieties of Oleum Morrhuæ, should be kept closely corked and in a perfectly dark and cool place. It is especially urged that these oils should not be kept for show in and about the window, as they are thus seriously deteriorated, becoming in a short time quite rancid by the action of light.

Potassii Iodid, Pulv. Gum. Guaiaci, Quiniæ Sulph., Santoninum, Hydrarg. Subchlor, Vin. Ipecac, should not be exposed to the direct sunlight.

Sp. Ætheris Nit. will contract acidity much faster if exposed to the light; it is best kept in a dark place, or in bottles covered with yellow paper.

Acid. Hydrocyanic should be kept in well corked bottles, lying on their side, in a cool, dark place.

Strong Mineral Acids should be kept in a cool place. Sulphuric acid, if left in an unstopped bottle, rapidly absorbs moisture from the air, and in a short time is very considerably reduced in strength.

Alcohol Absolute.—The remarks about Sulphuric Acid equally apply to alcohol.

Chloroform should be kept in well stopped bottles in a cool place, and not exposed to a strong light.

Cortex Aurantii—Cortex Limonis.—These should be kept cool, dry and in the dark.

Hydrarg. C. Creta is liable to become oxidized if long exposed to the action of the air, and to become contaminated with peroxide if exposed to the action of both air and light.

Potassa Sulphurata.— Stock should be distributed in small bottles sealed down, and should be rejected when it ceases to have an aloetic fracture.

GENERAL DIRECTIONS.

Essential Oils should be kept in a cool place and not exposed to *direct sunlight.*

Extracts should be kept excluded from the air as far as possible, and in a dry, cool place, to prevent evaporation and the development of fungoid growth.

Infusions should be kept in a cool place, whether freshly prepared or in a concentrated form. Those which contain essential oils, such as cascarilla, ought not to be filtered; this, though frequently done, especially with concentrated infusions, greatly deteriorates their value.

Juices should be kept in a cool, dry place. Lemon and lime juice, when freshly expressed, must be allowed to deposit the albuminous matter, and the juice should then be bottled off, taking care that the bottles are nearly filled; they must then be corked and tightly sealed.

Leaves should be kept in tins or bottles in a cool place, and the stock of English leaves, as conium, hyoscyamus, digitalis, belladonna, and stramonium, renewed annually.

Lozenges should be kept as dry as possible; a moderate warmth is not objectionable.

Ointments ought to be kept in a cool, dark place, and it is of the greatest importance to thoroughly scald and well dry the jar before putting in the fresh stock.

Pill Masses should be kept in jars well covered, and in a cool, dry place, to prevent the dissipation of essential oils, and the mass from becoming dry and hard.

Powders should be kept in a cool place and not exposed to a strong light, as light tends to bleach some powders and oxidize those containing essential oils. Heat renders valueless many powders by dissipating the essential oils they contain.

Roots should be kept in a dry, airy place; and in the case of rhubarb and others which are liable to be attacked by insects, as soon as it is noticed that this is the case, the portion so affected should be separated from the bulk, for if this is not done, the whole will soon be attacked.

Silver Salts should be kept from contact with organic substances, and not exposed to the light.

Suppositories, Pessaries and *Bougies* should be kept in a cool place.

Syrups should be stored in a cool place. *In storing,* care should be taken that the cork is loosely inserted; if the syrup should ferment, the best plan to stop fermentation and drive off air and carbonic acid gas, is to heat it to about 120° Fah.

Tinctures, Wines and Spirituous Preparations generally should be kept cool and not exposed to a strong light.—*From Southall Bros. & Barclay's Price Current, Birmingham, England.*

ASAFŒTIDAS OF THE BOMBAY MARKET.

BY W. DYMOCK.

Professor of Materia Medica, Bombay.

Three distinct kinds of Asafœtida are found in the Bombay drug market, and are known to dealers as Abushaheree Hing, Kandaharee Hing, and Hingra.

Of each of these drugs numerous qualities, more or less mixed or adulterated, are met with, but I purpose first to notice the unadulterated varieties only.

Abushaheree Hing is brought from the Persian Gulf ports, principally from Abushaher and Bunder Abbas; it is produced in Khorasan and Kirman by the *Ferula alliacea* of Boissier.

Specimens of the plant with the gum resin attached have been supplied to me through the kindness of Mr. Ardeshir Mihrban, of Yezd, and these specimens, which show both flowers and fruit, have, with plenty of mature seed, been forwarded to Mr. D. Hanbury, who has kindly taken the trouble of submitting them to Boissier, and has also sent packets of seed to the botanical gardens of Kew, Edinburgh, Oxford, Paris, St.

Petersburg, Berne, Strassburg, Florence, Pisa, Naples, Palermo, Athens, and to botanical friends on the Mediterranean coast, in South Africa, and a few other places.

The specimens sent to Mr. Hanbury were collected near Yezd and Kirman, and were from three and a half to four feet in height, and the roots of some young plants which had never flowered were quite fresh when they arrived in Bombay, and exuded a thick milk when cut, which after a day or two became brown and translucent.

It is this drug alone that appears in the Bombay Custom returns as Hing or Asafœtida; all other kinds pass under the name of Hingra. Hing arrives here either in skins sewn up so as to form a flat oblong package, or in wooden boxes. It varies in appearance with age; when quite fresh it is soft and of the consistence of treacle, of a dull olive brown color, and *purely garlic odor;* it is mixed with about an equal bulk of slices of the root. After having been kept some time the gum resin becomes hard and translucent, and of a yellowish brown color.

In 1872–73, 3,367 cwts. of this drug were imported from the Persian Gulf.

The method of collection has been described to me by Mr. Godrez Mihrban, of Yezd, and resembles the method of collecting Asafœtida, as described in the "Amanitales," except that the slices of root are mixed with the juice.

The price of the best Hing in Bombay is from twenty rupees to twenty-two rupees per maund of forty pounds.

Kandaharee Hing is a much rarer article and only occasionally appears in this market. It is brought from Kandahar packed in goat skins which are sewn up into an irregularly shaped oblong bag with the hair outside. This Asafœtida, when fresh, is in flaky pieces quite wet with essential oil, of a yellow color, opalescent, with an odor like a mixture of garlic and oil of carraways. When kept for some time the gum resin loses its moisture and gradually becomes perfectly transparent and of a golden-yellow color; the odor also loses much of its aroma and approximates to that of the best Asafœtida of European commerce. Some packages of the latter, which I have examined this season in Bombay I found to contain small portions of the moist opalescent gum mixed with the ordinary opaque kind, as well as with some fragments of an intermediate character, partly opaque and partly opalescent. I believe this drug will turn out to be the superior kind of Asafœtida noticed by Bellew as obtained from the node or leaf-bud at Kandahar. Kandaharee Hing is little known in Bombay, and is not retailed in the shops. It fetches about double the price of Abushaheree, and is not always obtainable; it is used as a condiment by wealthy people in Northern India.

Hingra, or the Asafœtida of European, commerce comes to Bombay in large quantities from two sources, viz., Southern Persia and Affghanistan. The Persian drug is met with in two forms, viz., in tears more or less agglutinated together, and secondly, as a soft, white viscid mass. It arrives in skins or boxes, and is mostly exported to Europe, but some is used in India as a condiment or medicinally by the poorer classes. This gum resin is the Anghuzeh-i-Lari of the Persians, and there seems to be little doubt that it is the produce of Kämpfer's plant, whichever that may be. In price it varies much; the average for a good quality will be about ten rupees per forty pounds.

The Affghan drug differs somewhat from the Persian in appearance and odor. The best samples occur in small flat pieces of tears, to one side of which a few particles of sand are adherent as if the gum had run out into the ground near the root; these pieces are quite hard and dry, yellowish white externally, and display, when broken, a conchoidal milk-white surface. Many packages, as already mentioned, under Kandaharee Asafœtida, contain the opaque gum above described mixed with opalescent pieces and moist yellow particles together with much dirt; from such packages the best tears are removed, and the remainder pressed together forms second sort Asafœtida. Affghan Hingra is generally packed in skins, and the best sort will fetch about twelve rupees per maund of forty pounds.

The adulteration of Hing is carried on in Bombay. It is simply mixed with gum Arabic by treading the two together; the mixture is then packed up in skins so as to resemble genuine packages. Several qualities are prepared containing different proportions of gum.

Hingra is adulterated in Affghanistan and in Persia by the admixture of some white earthy material. The adulterated article which comes from Persia is in dirty white, gritty masses, and becomes very hard when kept. That from Affghanistan is of a brown color and in small roundish masses, easily crushed into powder by pressure; according to Bellew, gypsum and flour are the adulterations.

A substance called Heera Hing is also met with here; it is obtained from the packages of Abushaheree Hing; many of these are quite liquid in the center; the people who buy them for adulteration squeeze out this liquid portion and retail it at a high price as Heera Hing; it is of the consistence of treacle, and when dried becomes solid and translucent.

From the examination of a great many bales of fresh Hingra, I have come to the conclusion that the Persian variety is produced by a different plant than the Affghanistan. Probably *Scorodosma fœtidum* will prove to be the source of the Persian and Falconer's *Narthex* of the Affghanistan kind.—*London Pharm. Journal.*

RARE OILS.

The *Journal of Applied Science* gives a few brief notes on some oils which have been experimented on, or are in partial use. Some of these are of interest.

An oil stated to be extracted from the horse-chestnut is sold as a sedative in gout, here and on the Continent. We were at first doubtful whether this oil were really obtained from the horse-chestnut, but the following account of its manufacture appears in a respectable French publication—the *Abeille Medicale:* "In order to extract this oil, the horse-chestnuts are first ground to powder; the latter is then treated with sulphuric ether, which dissolves the oil, resin, and saponine contained in the mass; the oil is then obtained pure by evaporating the ether. Ten kilogrammes of horse-chestnuts yield ten grammes of oil. To use it, it must be applied with a fine hair brush on the part affected; if the pain is very intense, the unction should be applied circularly, so as to arrive gradually at the centre. When the first application is absorbed, a second one is applied after the lapse of a few minutes, and then a third and fourth if necessary. The oiled part is then covered with blotting-paper, cotton or flannel, and then with oil-skin; the patient must be kept in perfect repose. In some cases the application of oil causes an increase of pain for the first half hour, after which the sedative action commences; but generally the pain gradually disappears without any aggravation."

In Baden a beetroot oil used to be largely made, but the consumption diminished on the Continent, for it can no longer compete with petroleum as a burning oil, and there is further a heavy duty levied on its importation into France and Belgium. It is now chiefly used for lubricating wheels and spindles.

The seeds of many cucurbitaceous plants are used for oil-making in different countries; thus, in India, those of the water-melon (*Cucurbita citrullus*), of the cucumber (*Cucumis sativus*), of the melon (*C. Melo*), pumpkin (*Cucurbita Pepo*), and *Cucumis utilissimus*, are pressed for oil: those of the melon, water-melon, pumpkin and cucumber, yield clear, bland oils, which are suitable for culinary purposes; melon oil, however, soon turns rancid. The seeds of the bottle-gourd (*Lagenaria vulgaris*) yield a bland oil, and the seeds of the squash (*Cucurbita maxima*) furnish an oil suitable for food and burning. A medicinal oil is obtained form the seeds of *Luffa acutangula*, which has a medicinal reputation among the native practitioners of India. The seeds of the officinal colocynth (*Cucumis Colocynthus*) contain rather more than 4 per cent. of a bitter, fixed oil, which has been extracted in India for medicinal purposes. At Unyanyembe and other parts of Africa, where the cucumber grows almost wild, the Arabs derive from its seed an admirable salad oil, which in flavor equals, and perhaps surpasses, the finest produce of the olive.

Egusi oil is obtained from the seed of the wild melon, cultivated extensively in Abbeokuta and other parts of Africa, for home consumption. The value of the oil is about 2*s.* 8*d.* per gallon.

Abobora oil of Brazil is also from a Cucumis.

From the kernel of the wild mangosteen (*Garcinia Mangostana*) the people on the Malabar coast make a concrete oil, which is said to be used as a cosmetic. The seeds of the jack (*Artocarpus integrifolia*), Durian (*Durio zibethinus*) and other trees would yield oils likewise.

Grape stone oil is used for burning in Italy; it is extracted principally in Modena. In the Levant and parts of Germany, the pips or seeds have long been utilized for this purpose. From 30 lbs. of seeds three quarts of oil may be obtained, or about 18 per cent. The seeds of white grapes are less rich in oil than those of black grapes, and those from old vines yield less oil than the seeds from young vines. Those from Roussillon, Aude and Herault vines give 2 per cent. more oil than those from Bordeaux. The oil is of a golden yellow, and loses about one-fouth in purifying—but the deposit makes a good soap. It is equal to olive oil for burning, and has neither smell nor smoke.

In the Portuguese settlement in Africa, a bitter oil, obtained from a species of *Sterculia*, is employed generally for burning and for fomentations. In India, a semi-solid oil, containing a great quantity of stearine, is made in small quantities from the seeds of *Sterculia fœtida.*

An oil called Arco, used for fomentations is obtained in Africa from the small nut of a shrub called by the natives *Arbe d'Arco.*

The seeds of the custard apple (*Anona reticulata*) yield a mild oil, which has been expressed experimentally, but there is little ground for imagining that it will ever become an article of commerce.

At Trindad good specimens of oil have been extracted from the Avocado pear (*Persea gratissima*), and were shown some years ago; one from the succulent fruit in a ripe state and the other when green. A gold medal for this was awarded to Mr. H. Cruger, who stated that, easy of manufacture, it is as a lamp oil superior to cocoa-nut and other fixed oils in these very essential points—the brilliancy of the light, the length of time it burns, and the absence of any disagreable smell. It is very dark-colored, rather thick, and has a bitter taste, which, unless it can be removed, would render it unavailable for culinary purposes. It is estimated that it can be prepared for market at a cost of 2*s.* 6*d.* per gallon; but it is questionable if any extensive supply could be obtained. As an instance of ancient knowledge of modern discoveries, we may point out the fact that this Avocado pear oil has long been used both for food and illuminating purposes on the Spanish Main. It is mentioned as a commercial article in Colonel Cadazzi's statistical report on Venezuela. One conclusion may be derived from this fact, which confirms Mr. Cruger's statement, that the oil is by no means difficult of extraction; generally speaking, wherever you find an article used by the Indian tribes, you may be tolerably confident that Nature yields it without much trouble.

An oil called Umpeque is obtained at Mossamedes, Angola, from a species of *Ximenia.*

In Jamaica, a pure, limpid oil has been obtained by Mr. W. J. Marshall, of Portland, from the bread-nut (*Omphalea triandra*); whether it will bear a low degree of temperature without congelation has not been ascertained.

In Jamaica, an oil has been obtained from the seed of the Antidote Cacoon (*Feuillea cordifolia*). As the oil condenses at as high a tempera-as 93° Fahrenheit, it would be valuable for candle-making. The vine grows wild throughout the island, and it might be trained on poles, as hops are in this country, with the greatest ease and the utmost profit. From the seeds of *Feuillea trilobata* and other species, under the local names of Andiroba and Secua, an oil is obtained in Venezuela, Brazil, and other parts of South America, which is used medicinally for frictions, and also as a lamp oil.

Oil of *Telfaria pedata.* This plant is known in the Mauritius as Liane Lejoliff. The following description, by Mr. Vincent, is taken from Hooker's "Miscellany," vol. ii. p. 155: "The plant comes from the interior of Africa. The negroes call it in their own language 'Soualli-Koneme.' When growing within reach of trees, it climbs, soon reaching the top of the highest. It seems to prefer a light soil in the vicinity of water. Every fruit weighing about 60 lbs. bears from 200 to 300 seeds, each an inch in diameter and three or four lines thick. The net produce of each fruit may therefore average 50 lbs. weight of kernels, and yield

8 lbs. of excellent oil. It is cultivated at Zanzibar. The pulp of the fruit is intensely bitter." Professor Bernardin, in his "Visit to the Vienna Exhibition," gives some interesting details respecting this oil seed, which he states is eaten as food by the natives. The Portuguese settlers about the Mozambique call them Chataignes, or Castanhas de la Lambare.

Professor Bernardin also draws attention to the wood-oils obtained from some species of *Dipterocarpus*, in French Cochin China. The finer quality, from *Dipterocarpus alatus*, which could be utilized for making lacquers and varnishes, is worth forty francs the 60 kilos, and the commoner kind, from *D. lævis*, used for coating the hulls of ships, is worth thirty francs the 60 kilos.

The late Mr. D. Hanbury drew attention many years ago to this wood-oil or gurjun balsam as a substitute in medicine for balsam of capivi. The following is Roxburgh's account of the manner of obtaining it from *Diptarocarpus turbinatus*, an immense tree, native of Chittagong, Tipperah, Pegu, and other places to the eastward of Bengal (*Flora Indica*, ed. Carey, vol. ii. p. 513):

"This tree is famous over all the Eastern parts of India and the Malay Islands, on account of its yielding a thin, liquid balsam, commonly called Wood-Oil, which is much used for painting ships, houses, etc. To procure the balsam, a large notch is cut into the trunk of the tree, near the earth (say about thirty inches from the ground), where a fire is kept until the wound is charred, soon after which the liquid begins to ooze out. A small gutter is cut into the wood to conduct the liquid into a vessel placed to receive it. The average produce of the best trees during the season is said to be sometimes 40 gallons. It is found necessary, every three or four weeks, to cut of the old charred surfaces and burn it afresh; in large healthy trees abounding in balsam, they even cut a second notch in some other part of the tree, and char it as the first. These operations are performed during the months of November, December, January and February. Should any of the trees appear sickly the following season, one or more years respite is given them."

The same author also states that "wood-oil" is afforded by *D. costatus* (*D. angustifolius*, W. et A.), *D. alatus*, Roxb., and *D. incanus*, Roxb., the last mentioned being reputed to furnish the largest proportion of the best sort.

Another little known oil-plant is mentioned in Hooker's "Bot. Misc." Vol. II. p. 261, as follows: "Visiting Dr. Vanderkemp at his Hottentot village of Besseldorf, he showed me a shrub growing plentifully in the district, the properties of which seem to entitle it to more careful notice. I did not see it in flower, therefore can not discribe its botanical characters. It rises to the height of seven or eight feet, in a close, bushy form. The leaves are about two inches in length, lance-shaped and serrated. The fruit, equaling that of a small grape, is covered with a rough, coriaceous capsule, which opens vertically into the sections, exposing to view a pulpy rose-colored arillus. Within the envelope, which is of a delicate acid taste, is a kernel the size of a large pea, covered with a thin shell, and rivaling in taste and flavor the finest filbert. By bruising these kernels and boiling them in water, the Boors procure a large quantity of oil which they apply to various economical purposes, and I have not the least doubt that if the fruit was subjected in a skillful manner to the press, it would yield an oil equal in flavor to the finest extracted from the olive."

Argan Oil. The nuts of *Argania sideroxylon* yield a valuable oil. The husks are greedily eaten by cattle, and the wood is hard and useful for many domestic purposes. The British Vice-Consul at Mogadore gives the following account of it: "The argan tree grows more or less throughout the States of Western Barbary, but principally in the province of Haha, and south of Mogadore. The soil on which it is fonnd is light, sandy, and very stony. It is usually found upon the hills, which are barren of all else, and where irrigation is impossible. I should imagine, from the appearance of some of the trees, that they are from one to two hundred years old; and a remarkably large one in this neighborhood, I should say, is at least three hundred. This tree measures round the trunk twenty-six feet; at the height of three feet it branches off (one of them measures eleven feet near the trunk); these branches rest upon the ground at about fifteen feet form the trunk, and again ascend; the highest branch of this tree is not more than sixteen to eighteen feet; the outer branches extend to a circumference of 220 feet; this is the largest I am aware of. The system of propagation in this vicinity is mostly by seed; when sowing this, a little manure is placed with it, and it is well watered until it shoots, from which period it requires nothing further. It bears fruit at from three to five years, which ripens from May to August (according to the situation of the tree). The roots extend a great distance under ground, and shoots make their appearance at intervals, which are allowed to remain, thus doing away with the necessity for transplanting or sowing. As the fruit ripens, herds of goats, sheep and cows are taken out; a man beats the tree with a long pole, and the nuts fall, and are devoured voraciously by the cattle. In the evening they are driven home, and when comfortably settled in their yard, they commence chewing the cud and throw out the nuts, which are collected each morning as soon as the cattle have departed upon their daily excursion. I have heard it remarked that the nut passes through the stomach of the animal; but this is only a casualty, and not a general rule. Large quantities are collected by women and children, which are well dried; the hull is taken off, and stored for the camels and mules traveling in the winter. They are considered very nutritious. The process of extracting the oil is very simple. The nuts are cracked by the women and children (and not a few fingers at the same time, owing to the want of proper tools, for the nuts are very hard, and a stone is the only impliment used). The kernels are then parched in a common earthen vessel—ground in handmills of this country—then put in a pan—a little cold water sprinkled upon them; then it is well worked by the hand (much the same as kneading dough) until the oil separates itself, when the refuse is well pressed in the hand, which completes the process. The oil is let stand, and the sediment removed; the cake (in which a great deal of oil remains, owing to the want of a proper press) is generally given to the milch cows or goats. I never heard of any part being used as manure, but I have no doubt that it would form an excellent one. Some of these Argans are in clusters, others single trees."

At Port St. Stefano, in Tuscany, there is a manufactory of oil of *Pistacia lentiscus*, which is commonly used for lighting, and even for culinary purposes. When thus applied, it is deprived of its offensive smell by heating it with crumbs of bread.

The larger seeds of the buffalo tree (*Pyrularia oleifera*) yield a fixed oil.

Hickory nut oil (*Carya alba*), considered equal to the best lard or sperm oil for burning and machinery, has been made in Ohio, United States. It continues in a fluid state at a very low temperature, and is used in very delicate machinery, and, when properly refined, could be employed by watchmakers. The pig nut (*C. glabra*) is preferred for expressing, on account of its thin shell and greater abundance. The oil manufactured from the ordinary shell-bark, and large sweet hickory nuts, might come into general use for the table.

The seeds of the lime tree (*Tilia parviflora*) contain about forty-eight per cent. of their weight of greasy, non-drying oil analogous to that from almonds.

Tung oil is made in China from the berries of *Dryandra cordata*. The so-called bean oil, or oil of peas, is from the seeds of *Dolichos viridis*. An excellent table oil is expressed from the seeds of *Camellia oleifera*. It was for a long time undetermined what this so-called "tea oil" was, as it is comparatively unknown in Europe. It is, when fresh, quite free from smell, from a pale yellow tint, without any sediment when long kept. It resists a cold of 40° F., but at 37° becomes like an emulsion. Its density is 927. It is insoluble in alcohol, sparingly soluble in ether, and burns with a remarkably clear white flame. This oil might prove an important article of commerce in the East, because in its properties it is superior to cocoanut oil and the various other oils prevalently used for burning or as oleaginous condiments in Asiatic countries.

Maize oil. The grain of maize, or Indian corn, contains from six to twelve per cent. of oil, but that of southern growth contains less than northern. The Tuscarora is one of the varieties which do not contain oil. Rice corn contains the most, pop-corn ranks next, Canada corn third, and brown corn next. There is a curious difference observable in the mode of distribution of the oily and glutinous parts of Indian corn, the southern variety always having it on the sides of the elongated seed, while the starch projects quite through the grain to its summit, and by its contraction in drying, produces the peculiar pit or depression in this variety of grain. The Burden corn, which contains a very fine white oil, is still more remarkable for this arrangement. Indian corn is much more digestable by man after extrication of the oil, though not so fattening to animals that can digest oil. The uses of oil in Indian corn are manifold. It is obviously to protect the grain from rapid decomposition in the soil from long-continued wet, and to retain a portion of food until needed by the young plant, as the oil is uniformly the first portion of the grain taken up. It serves to keep meal from souring readily, as flint corn meal will keep sweet for years, even when put in large quantities, while the Tuscarora meal will sour in a short time. The oil, when yellow, shows its color through a transparent epidermis, or hull. The Golden Sioux, a twelve-rowed variety, is colored by the oil, in which variety the oil is transparent and colorless, and the epidermis being also free from color, the meal is white.—*Chemist and Druggist.*

THE PREPARATION OF VEGETABLE WAX.*

The production of vegetable wax has always formed one of the principal industries of the province of Kinshiu, and the trees bearing the wax berries (called by the Japanese Haji-mo-ki), grow profusely on the hill slopes and round the edges of most of the cultivated fields (excepting rice ground) of Higo, Hizen, Sinabara, Chikugo and Chikuzen, whereas in Satzuma they appear to be less prevalent.

The process of procuring wax suitable for export to Europe is a tedious one, requiring the outlay of some capital on the part of the manufacturer, who has to keep the berries on hand for at least one year, and, in order to obtain a very superior product, does so frequently for six or seven years from the time of their being picked and sold by the farmers.

The berries ripen in October and November, and are picked by hand. After exposure to the sun in that state for about five days, they are packed in common straw bags and stored by the manufacturer in his godown for periods varying from one to seven years. The average value of 10 piculs of the berries in this, their first stage, is 10 yen, the farmer's selling price.

The manufacturer of wax can carry on his business all the year round, being interrupted only by excessive heat or excessive cold. His establishment consists of godowns for storing the berries, a large shed containing the pans for heating, the presses for extracting the liquid wax, and as large a piece of level ground as possible for laying out the wax during its bleaching process. He establishes himself as near as possible to a supply of good clear water.

When sufficiently ripe, the berries are threshed with bamboo flails, and thus separated from their stalks, and are then crushed. This crushing process, which can readily be done between thumb and finger, discloses a small, hard red kernel, surrounded by an apparently dry husk or fibre. The wax is contained in this fibre, and only to a very small extent in the kernel, but it is not necessary to separate the two. They are then well steamed over an open kettle, the water in which is kept boiling by a wood fire underneath.

From the steaming sieve the mixture is placed "all hot" into the press bags, surrounded by bamboo rings to fit the aperture in the press, and as quickly as possible placed in the press. Wedges are driven home by repeated blows of a mallet, and the liquid runs off into its receptacle at the bottom. Primitive as this style of pressing is, the result has not yet been improved upon by the trial of hydraulic presses, which have at various times been tried by the Japanese for expressing both oil and wax. Their own presses cost but little, never getting out of order, last long, require nothing but cheap coolie hire, and, in actual percentage of liquid extracted, do very nearly as much work as an expensive "Langue's" hydraulic press, requiring steam or other power to drive pumps which frequently require overhauling and repairing. After being fully pressed, the "cake" or residue of the wax fibre is broken up, again steamed and once more put through the press, thus yielding all its available wax.

Meantime, the liquid quickly soldifies into a large block of dark green, coarse, and tallowy substance, which is at once boiled down and run off into small earthenware saucers.

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*Paper read before the Asiatic Society of Japan by Henry Gribble, Esq., of Nagasaki.

The loss in weight of the manufacturer's original purchase of 10 piculs of berries has by this time amounted to 8·50 piculs. His first quantity was reduced to 8·80 piculs by the thrashing process, and of the liquid now produced from the press he has only one picul and a half in the form of a block.

In order to purify and bleach the wax for export, it now becomes necessary to re-boil it in its present stage, mixed with water and ashes (either shell or charcoal ashes) and again run it off into large blocks. These blocks are then cut up into thin strips or stored, placed on mats and exposed to the air, during the fine clear weather only, for a period of fifteen days, and occasionally sprinkled with water. The material is then again boiled down, mixed with water only this time, and run into large blocks. Once more are these blocks cut up into thin strips and again exposed to the air; this time for a period of about five days.

Again boiled down, with no water, the impurities rise to the surface and are skimmed off, leaving the residue to be run into saucers, which is the form of vegetable wax known by the European consumer.

In the course of the purifying and bleaching processes the weight of the wax has been further reduced from 1·50 picul to 1·44 picul, and the cost of this production now stands at about the following figures, viz:

	Yen.
Original cost of 10 piculs berries	10·00
Coolie hire, threshing and crushing	1·28
Steaming and pressing	1·44
Waste of press bags and bamboos in pressing	0·32
Coolie hire during the bleaching process	1.20
Say	14·24

For the final production of 1·44 picul, being the equivalent of about ten yen per picul for the finished wax, without any allowance for interest on the capital used in the first purchase of the berries or in the plant and property of the manufacturer.

It only remains to be mentioned that the present market value of the finished wax is from 10·50 to 11 yen per picul when packed in boxes ready for export, and even this price, which shows only a loss to the Japanese manufacturer, is higher than the corresponding value of the same article in Europe, so that for the present, at least, this industry is not a profitable one, either to the manufacturer or the shipper. The value of wax, however, varies considerably, and about three years ago it was worth, for the London market, about 20 yen per picul.

Its use appears to be confined to the "facing" of candles and the manufacture of "vestas," and the frequent discoveries of cheaper substitutes for these manufactures materially affect the value of vegetable wax from Japan. For local consumption in the manufacture of Japanese candles there is always a considerable demand for vegetable wax in its unbleached state; but with the prevailing and increasing consumption of kerosene oil even this outlet for the native industry is getting much restricted.—*Chemist and Druggist.*

GLEANINGS.

How to make Sachets or Scent-Bags.—Various powders, etc., placed in silk bags or ornamental envelopes, are agreeable to smell of, and also economical for imparting a pleasant odor to linen and clothes as they are packed in drawers, as they prevent moths.

For heliotrope powder, take half a pound of orris root, one-quarter pound of ground rose leaves, two ounces powdered tonquin bean, one-half dram grain-musk, two drops otto of almonds; mix it all by sifting through a coarse sieve. This is one of the best sachets often made, and perfumes table-cloths, sheets, pillow-cases and towels deliciously.

For lavender powder, take one pound of powdered lavender, one-quarter pound of gum-benzoin, and one-quarter of an ounce of otto of lavender.

For patchouli, use one-half a pound of patchouli ground fine, and a very little of otto patchouli. This herb is often sold in its natural state as imported, and is tied up in half-pound bundles.

Sandal wood sachet powder is good, and consists of the wood ground fine. Cedar wood, when ground, forms a body for other powders, and will keep moths at a distance. Dried fennel, when ground, is also used for scent-bags, and ground nutmeg is liked for this purpose.

Mineral Wool.—The utillization of blast furnace slag, recently discovered, bids fair to be of some importance. It is stated that if a jet of steam be injected into a current of fluid scoriæ, fine, supple and elastic filaments are obtained. With certain slags these are of a brilliant white, and resemble cotton thread. The material is remarkable for its non-conductibility of heat, and hence may be profitably used for covering boilers, and for other purposes in which it is desirable to prevent radiation.

The following is a good recipe for raspberry vinegar: Pour over one pound of bruised berries one quart of the best cider vinegar; next day, strain the liquor on one pound of fresh ripe raspberries, bruise them also, and on the following day do the same. Do not squeeze the fruit, only drain the liquor thoroughly. Put the juice into a stone jar and add sugar in proportion of one pound to a pint. When the sugar is melted, place the jars in a saucepan of water, which heat; skim the liquor, and, after it has simmered for a few minutes, remove from the fire, cover, and bottle.

New Remedy for Burns.—There has been in a hospital for many months a case of extensive burn, in which different applications have been tried. Every new dressing succeeded well for a time, but soon it ceased to prove of advantage. The last agent that has been used, and is at present, is salicylic acid. The effect is more beneficial than that obtained by any of the former remedies. The method of using it is to form an emulsion with olive oil, one part of the salicylic acid to sixteen parts of oil. This mixture is painted over the ulcerated surface once or twice a day. It gives rise to a slight smarting sensation when first applied, but that soon passes off.

NEEDED REFORM IN SPELLING CHEMICAL NAMES.—The *Manufacturer and Builder* has gone into the spelling line. The editor of that journal thinks that a reform is needed in spelling chemical names, and gives his reasons why we should drop the final letter in various words. We do not imagine, however, that his method will become general, as there are some words, such as *bromine* and *iodine*, that will ever remain as they are. But we do think that the other words mentioned would be easier of pronunciation if the manner of spelling was adopted. The editor's ideas are embraced in the following:

Occasionally some of our readers point out what they think a misspelling of a word by an oversight; for instance, *gasolin*, *benzin*, *anilin*, *chlorin*, etc., in all of which we omit the final *e*, as usually written. We will mention that this is intentional, and done according to a rule we have adopted, by reason of the diversity in spelling, and often of corresponding pronunciation still prevailing. We have resolved on the omission of the final *e*, in the termination *ine*, where the *i* is pronounced soft, as in *gelatin* and *glycerin*, and to retain the *e* where the *i* is pronounced hard, as in *turpentine* and *carmine*. Most chemists already write *arabin*, *benzoin*, *bilin*, *casein*, *creatin*, *cumin*, *dextrin*, *chondrin*, *salicin*, *kaolin*, *isatin*, *paraffin*, etc., without the final *e;* why not, therefore, also write *anilin*, *benzin*, *bromin*, *chlorin* and *gasolin*, in none of which the *i* is or ought to be pronounced hard, as in *turpentine*.

We go a step further in this direction, and in order to avoid the fatal confusion which may arise from the similarity of the sound of *sulphide* and *sulphite*, *selenide* and *selenite*, *chloride* and *chlorite*, *cyanide* and *cyanite*, *nitride* and *nitrite*, we pronounce the *i* in those spelled with a *d*, soft, as as in *paraffin*, and spell them accordingly without the final *e*, thus, *sulphid*, *selenid*, *chlorid*, *cyanid*, *nitrid*, etc., and we leave the *e* in the others spelled with a *t*, and where the *i* is pronouced hard, as in *carmine*, and we write as usual *sulphite*, *nitrite*, etc., in conformity with the spelling and pronunciation of the mineralogical names *apatite*, *aragonite*, *cerite*, *graphite*, etc.

TO KALSOMINE A WALL.—Buy the best bleached glue if the walls are to be white or some light tint (if dark, it is immaterial, so the glue is clean), and use it in the proportion of a quarter of a pound of glue to eight pounds of whiting. Soak the glue over night; in the morning pour off the water, as the glue simply swells while soaking. Add fresh water, put it in a tin pail, and set that in a kettle of boiling water. When dissolved, stir into it the whiting, adding enough water to make it, after mixing, of the same consistence as common whitewash. It may be tinted to any color desired, and is applied with a whitewash brush. If the color is rubbed smooth in a little water first, and then mixed with the wash, it will be more even. If the walls have been previously whitewashed, scrape away all that will come off, and wash with a solution of white vitriol, two ounces in a pail of water. The vitriol will be decomposed, forming zinc white, and plaster of Paris, to which the kalsomining easily adheres.

It is important to dissolve the glue in a hot water bath; for if scorched by too great heat, its tenacity is impaired or destroyed.

POSSIBLE RECOVERY OF THE LOST ELGIN MARBLES.—Out of seventeen cases of marble sculptures taken by Lord Elgin from the Acropolis in Athens, in 1802, twelve reached the British Museum, and the remainder were lost, with the ship in which they were stored, by the foundering of the vessel during a severe storm off the Island of Cerigo. M. Makoukas, a resident of that island, has recently informed the Archæological Society of Athens that the marbles are now plainly visible, lying on the bottom of the sea at a depth of about ninety-six feet, and it is stated that prompt measures will be taken for the recovery of the valuable relics.

It is interesting to observe that the appliances by which these archæological treasures will be regained have sprung into existence since the marbles have reposed in the depths of the sea. Seventy-three years ago, the diver's dress and the vulcanized rubber of which it is made were unknown, and the works of ancient art have had to remain in their watery prison until, in the progress of inventive skill, means have developed themselves, by which their liberation, once presenting insurmountable difficulties, is now rendered a comparatively easy proceeding. Lord Elgin gained possession of the marbles through a firman of Sultan Selim III. Greece was then but a province of Turkey; the battle of Navarino had not been fought; and before achieving its independence, the country for many years after remained under the rule of the Turk, who at his pleasure bestowed upon foreigners the relics, which, by modern Athenian archæologists, are deemed of priceless value.

CARNIVOROUS PLANTS.—The *British Medical Journal* states that, at the last meeting held by the Edinburgh Botanical Society, Dr. T. A. G. Balfour reported some interesting experiments on the *Dionæa muscipala* (Venus Fly-trap, native of Wilmington, N. C.). The irritability under which the leaf contracts seems to be limited to six delicate hairs that are so situated on the surface of the leaf that an insect must brush them in crowding over it. Dr. Balfour touched every other part of the leaf with a needle, and no response followed; but the instant the base of one of the leaves was hit the leaf closed quick as a flash. Chloroform droped on a hair caused the leaf to close immediately, but water had no such effect. When the leaf shut upon an object incapable of affording nutrition, like a bit of wood or a dried fly, it opened again very soon. But, when it closed upon a live fly, caterpillar, or spider, the contraction lasted for about three weeks, during which time the inner surface of the leaf gave a viscous, acid secretion. It was noted, also, that this viscid secretion was only produced when an insect was captured. In the case of a fat spider it was very abundant, but, when a shriveled fly was enclosed, very little was poured out. As evidence that the plant obtains nourishment form the insects thus captured and digested, Dr. Balfour pointed to the facts that young plants of the *Dionæa* placed under bell glasses, from which of course, insects were excluded, did not thrive as well as those that were left free; and that while a bit of beef wrapped in a leaf of any other plant became putrid, a bit enclosed by the *Dionæa* remained entirely inodorous, but soon lost its red color, and was gradually disintegrated and reduced to pulp.

CURIOUS EXPERIMENT IN INSTANTANEOUS CRYSTALLIZATION. — It is well known that various salts dissolve in water in different proportions, and that the solution usually takes place more readily when the water is warm. After cooling, crystallization of the fluid takes place, but this may be prevented by leaving the solution in absolute quiet, and protecting it from contact with the air. It is then said to be supersaturated, and the least shock, or the addition of a minute crystal of the salt, is sufficient to cause instantaneous crystallization of the whole. A curious experiment, based on the above, has recently been devised by M. Peligot: One hundred and fifty parts, by weight, of hyposulphite of soda are dissolved in fifteen parts of water, and the solution is turned into a large test tube, previously warmed, so as to half fill the same. Another solution of one hundred parts, by weight, of acetate of soda in fifteen parts of boiling water is made, and this is carefully poured in on top of the first solution, so as to float on and not mingle with the latter. To the above two solutions is then added a little boiling water, and the whole is left in quiet to cool.

After the cooling is accomplished, a little crystal of hyposulphite of soda may be let down into the liquid. The fragment will traverse the acetate solution without effect thereon; but on its reaching the solution below, instant crystallization of the same will take place. As soon as the reaction in the hyposulphite is finished, a crystal of acetate of soda may be caused to produce a similar result in the acetate solution.

A NEW CEMENT. — A French chemist is said to have succeeded in preparing a mineral compound, which is said to be superior to hydraulic lime for uniting stone and resisting the action of water. It becomes as hard as stone, is unchangeable by the air, and is proof against the action of acids. It is made by mixing together nineteen pounds of sulphur and forty-two pounds of pulverized stoneware and glass; this mixture is exposed to a gentle heat, which melts the sulphur, and then the mass is stirred until it becomes thoroughly homogeneous, when it is run into molds and allowed to cool. It melts at about 248° Fah., and may be re-employed without loss of any of its qualities, whenever it is desirable to change the form of an apparatus, by melting by a gentle heat, and operating as with asphalte. At 230° Fah. it becomes as hard as stone, and preserves its solidity in boiling water.

BICARBONATE OF SODA IN TOOTHACHE.—Dr. Dyce Duckworth contributes the following to the London *Practitioner* for April. He was called on to treat a case of very severe toothache, and tried various ordinary remedies, including chloroform and carbolic acid, without any benefit to the patient. He then remembered having read that the pain might be relieved by holding in the mouth a solution of bicarbonate of soda. He at once gave the patient half a drachm in an ounce of water, and, to his astonishment, the pain ceased immediately, and complete relief was secured. He thinks that, as the remedy is so simple, and the disease so distressing and often intractable, this treatment may be worthy of notice and of imitation.

Poisonous Dyes.—The coloring matter, corallin, has been for some time suspected of noxious qualities, as the bright red woolen garments dyed with it has occasionally produced violent eruptions on those wearing the articles. Experiments on animals have proved that pure corallin is innocouous, but in dyeing it is generally associated with arsenic, hence the mischief arising from its use. Recent accounts state that Dr. Bijou, a physician had an apartment hung with wall-paper having a red pattern on a brown ground. Whenever he inhabited this room he was affected with pinching, itching and burning sensations in the eyelids. After sleeping a few nights in the room he was attacked with a severe inflamation of the eyes. Upon analysis it was found that the paper was dyed with corallin mingled freely with arsenic.

Another singular case of poisoning from an aniline dye is reported. A gentleman purchased a hat, and after wearing it for one or two days was troubled with intolorable headache, at the same time little ulcers formed upon his forehead, his eyes became inflamed, and the whole upper part of the head was much swollen. The symptoms were evidently due to the hat, and an examination by a chemist showed that the brown leather lining had been colored by a poisonous aniline dye. It seems inflammation is unavoidable when this dye comes in contact with the skin.

Notice.—The delay in receiving the July issue of the Pharmacist by some of our subscribers, was due to a misunderstanding which had arisen regarding the weight of one of the mailable packages of the journal. We hope that such of our readers who have some influence with members of the next Congress, will exert it for a modification of the present objectionable law regarding printed matter.

TRANSACTIONS OF PHARMACAL COLLEGES AND SOCIETIES.

AMERICAN PHARMACEUTICAL ASSOCIATION.

The twenty-third annual meeting will be held at Odd Fellows' Hall, corner of Berkeley and Fremont streets, in the city of Boston, Mass., on Tuesday, September 7th, commencing at 3 o'clock P. M. The following traveling arrangements have been made:

1. Leave Baltimore Tuesday, September 2d, at 3 P. M., per steamer, stopping at Norfolk, Va., on Friday, and arriving at Boston on Sunday afternoon. Fare to Boston, $12.50; for round trip, from and to Baltimore, $20.

2. Leave Philadelphia from foot of Pine street, on Saturday, September 4th, at 10 A. M., per steamer, arriving at Boston on Monday forenoon. Fare $10 each way.

There are no extra charges. Berths should be secured and paid for several weeks in advance. For berths from Baltimore, apply to Wm. S. Thompson, 5 West Baltimore street; from Philadelphia, to the undersigned.

3. Between New York and Boston. Tickets by the Fall River Line may be obtained from L. M. Royce, care of McKesson & Robbins, 91 Fulton street, N. Y. Price, $7 for the round trip.

The HEADQUARTERS of the Association in Boston will be at the St. James Hotel. An excursion to the White Mountains, at reduced rates, to take place after the meeting, is contemplated. Further particulars in Boston.

The Pharmaceutical EXHIBITION will be held in the same building with the meeting. Goods should be sent early in September, freight prepaid, to the Local Secretary, S. A. D. Sheppard, at the Odd Fellows' Building.

REPORTS AND PAPERS may be sent to the Local Secretary, to the undersigned, or to the Chairman of the Committee, Wm. Saunders, London, Ontario.

Blank forms for APPLICATIONS for membership may be obtained from the undersigned; applications may be addressed to him, to the Local Secretary, or to the Chairman of the Committee, G. W. Kennedy, Pottsville, Pa.

Annual dues, and fees for admission and certificate, or for lifemembership, are payable to the Treasurer, Dr. C. A. Tufts, Dover, New Hampshire.

Members are requested to send in their card photographs, for the album of the Association, to the Chairman of the Committee, P. W. Bedford, Box 1738, New York; and those who have paid the dues for 1874 and failed to receive the Proceedings, will please notify the undersigned.

JOHN M. MAISCH, *Permanent Secretary.*

Philadelphia, July, 1875.

U. S. PHARMACOPŒIA.

The provisions established by the first body who were convened to produce this national work, were such that there should again assemble suitable persons, after the lapse of ten years, to revise the work they were then about to issue. Each succeeding body has adopted the same provision, and accordingly, in 1880, there will be a convention of pharmaceutists and physicians in Washington to revise our present standard.

That it needs a careful revision is evident to any one who has attempted to prepare its formulæ.

Much has been written, within the last three years, on the desirability of an "International Pharmacopœia;" but if we should judge from the remarks of the English delegates to the International Pharmaceutical Congress held last year, the manuscript copy produced by the committee to whom it was referred will hardly satisfy any one of the countries that might be expected to use the work. However desirable it may be to have a standard which can be used in all parts of the world, nothing yet has been accomplished that will warrant the belief that such a work will be perfected within the five years next to come.

Already several of the colleges of pharmacy have appointed committees who are to collate, revise, and prepare such matter as it may be wise to insert in the next revision.

The American Pharmaceutical Association have also appointed a committee for the same purpose; and though the time seems distant (five years) before another convention for revision is to be called, yet we believe the material prepared in advance by those who are interested in the undertaking, will be more abundant and perhaps scientific than ever before. Although these bodies are directly engaged in this work, there are doubtless many individuals who have found difficulties in formulæ, or have by experiment devised better methods for producing some of the articles embraced in the U. S. Pharmacopœia, or who would like to contribute their quota for the general benefit of American pharmacy.

To such we would say, send your communications to the Chairman or Secretary of the Pharmacopœia Committee of the American Pharmaceutical Association, who are: Prof. P. W. Bedford, (P. O. box 1738) New York, or Prof. C. Lewis Diehl, Louisville, Ky.

NEW YORK ALUMNI ASSOCIATION OF THE PHILADELPHIA COLLEGE OF PHARMACY.

The graduates of the Philadelphia College of Pharmacy, residing in New York and vicinity, held a meeting in the lecture hall of the New York College of Pharmacy, University building, Tuesday evening, June 29, for the purpose of organizing a society of the Alumni.

H. S. Wellcome was chosen Chairman, and F. C. Von Weber, Secretary of the meeting.

The following officers were elected: President, P. W. Levering; 1st Vice-President, W. B. Means; 2d Vice-President, T. C. Morgan; Secretary, H. S. Wellcome; Corresponding Secretary, Wm. Wilson; Treasurer, A. J. Ditman; Executive Board, F. C. Von Weber, M. D., Thos. D. McElhenie, J. R. Mercein, W. R. Laird, J. Jungmann, W. Lehman.

Mr. Wellcome delivered an opening address, urging the need of a society where the graduates might meet and interchange ideas, and discuss scientific subjects—the necessity of each one taking an active and personal interest with as much desire and freedom in imparting knowledge as in receiving. If at first the efforts of the society do not meet with entire success, we must not lose courage, for permanent organizations do not spring up with a mushroom growth.

The President, Mr. Levering, then took the chair, with appropriate acknowledgments, and addressed the members with a few words of encouragement, pledging his every effort to promote the good of the society in the discharge of his duties.

The other officers responded with similar acknowledgments.

After some discussion the society adopted the name, New York Society of Alumni of the Philadelphia College of Pharmacy.

A communication was read from Prof. Maisch, who approved the organization of such a society. Also, a communication from the New York College of Pharmacy, granting the use of their room for the meeting, with expressions of approval and encouragement.

Resolutions were adopted, tendering a vote of thanks to the New York College of Pharmacy for their kindness and courtesy.

The following committee was appointed by the chair, to draft constitution and by-laws, for approval at the next meeting: H. S. Wellcome, Jno. W. Wood, J. W. Howmann, T. D. McElhenie, T. C. Morgan.

The meeting adjourned to Tuesday evening, July 13, 1875.

F. C. Von Weber, M. D., *Sec'y of the Meeting.*

The second business meeting of the association was held Tuesday evening, July 13. Dr. Von Weber was called to the chair, the President and Vice-President being absent.

An objection was made to the name adopted at the last meeting. After some discussion it was decided to change it to New York Alumni Association of the Philadelphia College of Pharmacy.

The Committee on Constitution and By-Laws presented a draft which they had agreed upon. It was discussed, some changes made, and adopted.

Matters of general interest pertaining to the future course of the association were discussed.

The following gentlemen were appointed as Committee on Essays and Papers: Jno. W. Wood, F. C. Von Weber M. D., Wm. Wilson.

A delegation was elected to represent the association at the meeting of the American Pharmaceutical Association, at Boston, in September, consisting of the following members: A. J. Ditman, Henry S. Wellcome, B. T. Fairchild, J. R. Mercein.

The association has now fully organized, and with cheering prospects for its success and usefulness. It has been pleasing to see the old classmates meet, and recall scenes in the old lecture hall at college, the famous Zeta Phi elections and discussions, and the final examinations.

The regular meetings of this association are to be held on the first Tuesday in each month. Essays and papers will be read, discussions on subjects relating to the profession, and exhibition of specimens, new remedies, etc.

HENRY S. WELLCOME, *Secretary.*

ABSTRACT FROM CONSTITUTION.—PREAMBLE—We, the graduates of the Philadelphia College of Pharmacy, residing in New York and vicinity, believing that by a united effort we may benefit each other and the profession by the encouragement of scientific research and investigation, and the maintenance of a more social intercourse; therefore we resolve to form ourselves into a permanent organization for the promotion of those objects.

ARTICLE I., SEC. 2. The objects of the association are the cultivation of a more social relation between the graduates, and an interchange of pharmaceutical knowledge; the discussion of allied scientific subjects, and the advancement of our profession.

ARTICLE II., SEC. 1. Any graduate of the Philadelphia College of Pharmacy, who is approved of by the association, is eligible for membership.

ARTICLE IV., SEC. 4. The corresponding secretary keeps a register, in which graduates in pharmacy, who come to New York in quest of employment, may enter their names, on presentation of unquestionable references of character and ability.

MARYLAND COLLEGE OF PHARMACY.

At the stated meeting held on the 8th inst., the following officers were elected: President, Joseph Roberts; 1st Vice-President, Wm. Silver Thompson; 2d Vice-President, J. Newport Potts; Treasurer, J. Brown Baxley; Secretary, Edwin Eareckson; Examiner, Louis Dohme.

The delegates to represent the college at the next meeting of the American Pharmaceutical Association are, N. Hynson Jennings, Wm. Silver Thompson, Joseph Roberts, E. Walton Russel, and Louis Dohme. Alternates, Henry A. Elliott, J. Newport Potts, J. Faris Moore, Chas. F. Adams, and Edwin Eareckson. The delegates to the conference of teaching colleges of pharmacy are, Prof. J. Faris Moore, J. Brown Baxley, and Louis Dohme.

From present indications it is expected that a full delegation will attend the Boston meeting. A committee from the college, consisting of Messrs. Wm. Silver Thompson and N. Hynson Jennings, has in charge the getting up of an excursion party, to go by steam from this port. To those who love the ocean waves and refreshing breezes, the trip will be delightfully pleasant. The steamers of this line are commodious, of swift speed, and afford excellent accommodations. The reduced rate for a party of twenty and more (including state rooms and meals) are, to Boston, $12.50; round trip, $20.00.

REVIEWS AND BOOK NOTICES.

Sur les Differentes Modes d'Administrer le Phosphore in Nature. Par le Docteur C. Mehu, Pharmacien de l'hospital Necker.

Des Liquides de l'Hydrocele de la Tunique Vagtnale, et de l'Hydrocele Enkystee de l'epidyme. Par le Docteur Mehu, Pharmacien de l'hospital Necker.

On the first of these essays, reprinted from the *Bulletin de Therapeutique Medicale et Chirurgicale*, Dr Mehu reviews the various methods which have, from time to time, been proposed for the administration of free phosphorus. He comments upon its combination in solid form, with resin, wax, balsam of tolu, spermaceti, etc., showing the unsatisfactory nature of such preparations; the ethereal solution, the solution in alcohol, or a mixture of alcohol and glycerin, he finds are preferable, but he clearly shows the superiority of the phosphureted oil, as originally proposed by himself;* Dr. Mehu insists upon the importance of the preliminary heating and filtration of the almond oil. It has been objected that the phosphorus in this preparation is gradually oxidized, as shown by its phosphorescence; this may be obviated according to its author, by the addition of a drop or two of ether, to a bottle of the phosphureted oil.

In the second memoir mentioned above, Dr. Mehu extends his observations on the serosities of the body, normal and pathological, studying with praisworthy care the chemistry of the serum from hydrocele of the *tunica vaginalis*, and that from the encysted hydrocele of the epididymis. He carefully distinguishes these fluids, establishing points of difference between them, in a manner which must prove of interest to the pathologist, and of service to the surgeon. The essay is extracted from the *Archives* Generales de Medecine.

*Pharmacist, Vol. VII., page, 222.

THE PHARMACIST.

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PHARMACY IN RUSSIA.

BY DR. C. MEHU.

The following interesting account of the conditions under which pharmacy is practised in Russia, has been contributed to the *Journal de Pharmacie et de Chimie*, by Dr. C. Mehu, who attended the Conference at St. Petersburg last year, as a delegate from the Paris Society of Pharmacy.

The larger proportion of Russian pharmacists are of German origin; all their names are either German or Polish. It has been only during the last few years that the Emperor Alexander has permitted a true Russian to become a pharmacist. The Emperor Peter the Great reserved to Germans the pharmacies in his dominions.

The pharmacist who conducts an ordinary pharmacy takes the name of "free pharmacist" (*freier Apotheker*); others bear the name of "crown pharmacist," (*Krone Apotheker*). The so-called "crown pharmacies" are those of the civil and military hospitals and benevolent institutions. Of these, there exist twenty-five in St. Petersburg, two or three among them supplying the public with medicaments.

There are also in Russia some pharmacies called "*Filial-Apotheke*," or branch establishments. In the district of St. Petersburg, there are two such to fifty pharmacies. As their names indicate, they are dependent upon another pharmacy, and are established in places where an independent pharmacy could not be founded. The branch establishment is within a distance not exceeding fifteen "versts" (a Russian measure of three thousand five hundred and one feet.—ED. PH.) from the mother pharmacy, and it is worked at times when there is a temporary augmentation of the population of the district, as during a fair, or during the winter when the roads are rendered impracticable by the snow, or during the fine season for a group of country houses. The branch establishment belongs to the nearest pharmacist; sometimes to several pharmacists residing within a radius of less than fifteen versts. It contains all the medicines of an ordinary pharmacy, but it is not necessary that it should contain a laboratory, a store of drugs, and other additions required by the regulations for a complete pharmacy. It is conducted by a graduate in pharmacy, under the superintendence and responsibility of the proprietor of the normal pharmacy upon which it depends. In the branch establishment, all the prescriptions are registered, as in other pharmacies.

The law compels the pharmacist to enter all the prescriptions he executes, and to pass a special examination in the deciphering of handwriting and the legal prices of medicines.

The annual number of prescriptions in a town is one of the elements which determine the Government in opening or closing a pharmacy. For this purpose, a calculation is made of the average number of prescriptions made up in all the pharmacies of the locality, during the three years last past, the renewal of a prescription being reckoned as a new prescription. In Moscow and St. Petersburg, there is a pharmacy to 12,000 inhabitants, and an average of 30,000 prescriptions. In the principal seats of the Government, there is one pharmacy to 10,000 inhabitants, and 15,000 prescriptions. In the chief places of a district, there is a pharmacy for 7,000 inhabitants and 6,000 prescriptions. Finally, in sea-ports there is one pharmacy to 7,000 inhabitants and 12,000 prescriptions. The military are not reckoned in the numbering of the inhabitants.

In the large cities, pharmacies sell for a sum equal to from three to three and a half times their annual receipts. In the small towns, the price falls to one or one and a half times their annual receipts.

When the opening of a new pharmacy is authorized, it is established in the quarter where the augmentation in the number of inhabitants has become most manifest. If no pharmacy exists in a circuit of 15 versts (= about ten miles), although the number of neither the inhabitants nor prescriptions in the locality comes up to the regulation standard, the medical council is authorized to open a pharmacy.

The pharmacies in the large cities are inspected several times each year, and those of the small towns at least once a year, by Government medical officials. More than once, during recent years, grave complaints have been made respecting the manner in which these commissioners do their work, and of their inexperience in pharmaceutical matters. In the case of great negligence, or bad pharmaceutical preparations, the Government can withdraw from the holder of a pharmacy the privilege accorded to him, but not until after he has been fined several times. The withdrawal of the privilege is ordered by the medical department of the minister of the interior, on the recommendation of the medical authority of the Government in which the pharmacist resides. The granting of the privilege, and the penalties for the contravention of the regulations, are all the subject of particular rules.

After satisfying these numerous shackles upon his liberty, it would appear reasonable to expect that the pharmacist would be assured of a comfortable living. This is, unfortunately, not the case, especially in the smaller towns; because every town and village can have a pharmacy which must supply medicines at cost price in the cause of humanity. This pharmacy is placed under the direction of a medical man, who draws from it all the profit possible, to the great detriment of the pharmacist of the town, who, in consequence of the unfair competition, is often compelled to close his pharmacy, whilst his hypocritical competitor, free from the expense of rent and first establishment, takes his ease without running any risk. The limitation of the number of pharmacies, moreover, has only been instituted for the profit of the State. The compulsory legal tariff places the pharmacist at the mercy of commissions in which medical men constitute the majority. On the other hand, the illegitimate competition of the medical men at the benevolent institutions, contributes to place the Russian pharmacist in a position little to be envied.

Education.—There is no special school of pharmacy in Russia. There are professors of pharmacy in the universities of Moscow, Kiew, Kasan, Charkow, Dorpat, and Varsovie. At St. Petersburg, the teaching of pharmacy is entrusted to the Medico-Chirurgical Academy, established at the ministry of war.

The pharmacist can acquire all his grades in the educational centers. Each of these establishments has a plan of study which is vigorously observed. With the courses of theoretical and practical pharmacy, the student attends also the university courses, particularly those in chemistry, physics, mineralogy, botany, zoology, during three or four semestres.

The pharmaceutical student passes through three successive grades: "assistant," (*Gehulfe*), "dispenser," (*Provisor*), and "master," (*Magister.*)

First Grade.—Before being admitted to pass the examination for assistant, the apprentice (*Lehrling*) must present (1), a certificate that he has entered as apprentice either in a free or a crown pharmacy, and (2), a certificate attesting that he has passed at least three years in a free or a crown pharmacy. The certificate also states the zeal and behavior of the candidate during that time, as well as his progress in the art of pharmacy, and it must be signed by the master, and also the magistrate in whose jurisdiction the master resides. A pharmacist is interdicted from receiving as an apprentice a pupil who does not possess a certificate from a director of a gymnasium or similar instititution, to the effect that the young man is suited to enter a pharmacy as an apprentice, and possesses a competent knowledge of the subjects taught in the three lower classes of a gymnasium. The period of three years may be reduced to two years in the case of young men who have completed their courses at a gymnasium before entering a pharmacy.

The examination for the degree of "assistant" includes—

(1) A knowledge of the laws which concern the pharmacist.

(2) Translation of a passage from the national or some other pharmacopœia, written in Latin.

(3) The reading of a medical prescription. The candidate has also to indicate the order in which he would make it up, fix the price according to the legal tariff, and to give practical proof of his dexterity as a dispenser, and his ability to overcome any difficulties the prescription may present.

(4) The recognition of the most usual pharmaceutical substances (simple drugs and commercial products) and the indication of their principal characteristics.

(5) The recognition and description of the more common medical and poisonous plants, especially those that grow in the wild state in Russia.

(6) The method of preparing, the properties, and the constituent elements of two frequently used compound medicines, and of two chemical preparations.

(7) Knowledge of the various names of medicines.

(8) Knowledge of the usual doses of powerful medicines.

(9) The preparation by the candidate, in the laboratory of the university or academy, under the supervision of the professor of pharmacy, of two common products specified by the examiners, one of them to be a pharmaceutical compound, the other a chemical product. The candidate has also to describe the processes of preparation he adopts.

Second Grade.—The candidate for the grade of "dispenser," (*Provisor*) must possess a thorough practical and theoretical knowledge of the subjects pertaining to pharmacy. Upon presenting himself for examination, he must produce a certificate that he has served three years in a crown or private pharmacy, and that he has attended, in a school of medicine or university, complete courses in the sciences which are the subject of examination (usually four semestres.) The assistant enters the school of medicine, or university, without undergoing an examination, upon the simple presentation of his diploma as assistant. He also brings a certificate he received upon leaving the pharmacy in which he completed his first stage, and this certificate reports upon his conduct and industry. These certificates are regulated by the superior medical authority.

The examination is public, and is held in the large room of the University; it is oral and practical. The subjects for examination are as follows:

Mineralogy—Terminology and history of the minerals used in pharmacy.

Botany.—Terminology; principal systems of classification; the recognition and description of at least two fresh or dried plants.

Zoology.—The principal systems of the classification of animals; description of one or two animals, parts of which are used in medicine.

Physics.—In its relation with chemistry and pharmacy.

Chemistry.—Principally from a pharmaceutical point of view, and in respect to chemico-legal researches.

Pharmacology.—Doses and pharmaceutical forms of medicines. Also a knowledge of the temporary assistance to be rendered to the sick and wounded in urgent cases.

The candidate has besides (1) to recognize and describe, by their external characters, two pharmaceutical drugs and two chemical products, and to make quantitative and qualitative analyses of the latter; (2) to conduct a chemico-legal research under the supervision of the examiner, and to give a written report; (3) to prepare two pharmaceutical chemicals in a school of medicine, under the supervision of the professor of pharmacy; and (4) to show generally that he possesses the knowledge necessary to fit him to undertake the responsibility of a pharmacy.

Third grade.—The title of "master," (*Magister*) is the highest that can be obtained by a pharmacist. Before being admitted to the examination for this degree, the candidate must have served at least one year as a "dispenser." The examination is mainly in the same subjects as that for "dispensers," but the candidate must exhibit a more extensive knowledge of chemistry and pharmacy than is required from a "dispenser." He has (1) to make two analyses, or chemico-legal researches, and to render a satisfactory report; (2) to treat in writing of two questions chosen by the examiners—one in pharmaceutical chemistry, the other in natural history or physics. The answers may be written in Latin, Russian or any commonly used European language. The candidate then presents a thesis, written in Latin, Russian, or any commonly used European language. The subject of this thesis may be chosen by the candidate, or selected by the examiners. The discussion upon the thesis, and the annexed questions, (six at least) may be taken in any of the beforementioned languages, at the choice of the candidate. To this test the same rules are applied as regulate the reception of doctors.

The holder of a diploma as "master" takes the pharmaceutical oath, and subscribes his signature at the foot of this oath, printed across the diploma.

FORMULA FOR BURN MIXTURE.

BY CHAS. RICE.

Take of the best *white glue* (extra) 15 ounces. Break it into small pieces, add to it two pints of cold water, and allow it to become soft. Then melt it on a water-bath, add to it two fluid ounces of glycerin and six drachms of carbolic acid, and continue the heat on the water-bath until a *glossy, tough skin* begins to form over the surface in the intervals of stirring. The mixture may be used at once, after the glue is melted, and the glycerin and the carbolic acid are added, but, when time allows, it is advisable to get rid of a little more of the water, until the proper point is reached. On cooling, this mixture hardens to an elastic mass, covered with a shining, parchment-like skin, and may be kept for any time. When using it, it is placed for a few minutes on the water-bath, until sufficiently liquid for application (it should be quite fluid). Should it at any time require too high a heat to become fluid, this may be corrected by adding a little water. It is applied by means of a broad brush, and forms, in about two minutes, a shining, smooth, flexible, and nearly transparent skin. It may be kept for any time without spoiling, in delf or earthen dishes or pots turned upside down.—*Am. Journal Pharmacy.*

THE EXAMINATION OF BEER FOR ADULTERANTS.*

BY DR. G. C. WITTSTEIN.

The author first refers to the addition of potash or soda to sour or stale beer. The presence of either can be determined by the portion of ash yielded, which from Bavarian beer should not exceed one-half per cent. In a foot note the author observes that this percentage applies only to German beers, and especially Bavarian, since according to the experiments of T. Dickson,† English beers are much richer in ash. Sim-

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*Abstract of paper in the *Archiv der Pharmacie* for January, 1875.
†*Philosophical Magazine* [3], vol. xxxiii, p. 341.

ply testing the ash for the presence of potash or soda would be insufficient, since both the raw materials of beer—malt and hops—contain these alkalies. The author states that some experimenters have been betrayed into this error, and having found these alkalies have declared beer to be adulterated.

The author divides the other possible adulterants into two classes, "sweet" and "bitter." In the "sweet" class he mentions only glucose and glycerin.

The use of glucose would lead to an economy of malt, but of course it can only compensate for the malt sugar. As, however, in the course of fermentation through the formation of alcohol all, or almost all, the glucose would disappear, such beer would be abnormally poor in extractive. Glycerin not being capable of undergoing fermentation, Dr. Wittstein thinks that its addition does not allow of any reasonable explanation, and the brewer who would add a sweet syrupy solution to his manufacture would prove himself to be wanting in prudence.

The substances included in the "bitter" class, are—aloes, buck bean (menyanthin), gentian root (gentipicrin), colchicum root, flowers, and seeds (colchicine), colocynth (colocynthin), cocculus indicus (picrotoxin), nux vomica (brucine and strychnine), picric acid, quassia (quassiin), wormwood (absinthin). All of these substances are or contain bitter principles of so permeating and decided a nature, that smaller quantities of them than are usually used of hops impart great bitterness. They lack, however, the aroma and other important ingredients in beer, such as resinous matter and tannin. Moreover, the majority of them possess poisonous properties.

As innocuous amongst these bitter substances may be reckoned buck bean, gentian, wormwood, and perhaps also quassia; more doubtful, because in small quantities violently purgative, are aloes and colocynth. The remaining four—colchicum, cocculus indicus, nux vomica, and picric acid—are decidedly dangerous, and especially the active principles of the first three—colchicine, picrotoxin, brucine and strychnine. Notwithstanding, therefore, that in the testing of beer generally the whole of the bitter substances mentioned should receive attention, the latter are the more important because of their peculiar virulence. But the author adds, that up to the present time he has no knowledge of any one of them having been positively and with certainty referred to any beer; either because the beers actually examined did not contain them, or because in former years the detection of most of them was especially difficult. This difficulty, however, he considers has now been overcome through the progress made in organic chemistry.

The author does not appear to think that the use of these bitter substances in beer prevails to any great extent in Bavaria, and he considers that under ordinary conditions of price, hops are still the cheapest bitter for beer. He refers to the prevalent suspicion that cocculus indicus is added to beer by the brewer not only to increase its bitternes, but also to increase its stupefying power. He remarks that a notorious fact that a much larger quantity of cocculus indicus is imported than is used for medicinal purposes has lead, as in this country, to the conclusion that the greater portion finds its way into the beer breweries. This inference, however, Dr. Wittstein considers to be a very hasty one, since the greater part is used in the extirpation of vermin and the stupefying of fish.

The author recommends the following process of testing for the above-mentioned bitter substances in beer as one that he has repeatedly proved:

One litre of the suspected beer is evaporated by a moderate heat to the consistence of a thick syrup. This is poured into a tared glass cylinder—capable of containing ten times its volume—and weighed; five times its weights of 93° to 95° alcohol is added, and the whole is frequently stirred by means of a thick glass rod during twenty-four hours. By this means all the gum, dextrin, sulphates, phospates, and chlorides are separated, and a comparatively small portion is obtained in solution. After clearing, this solution is decanted, the residue is again treated with fresh alcohol, the two products mixed, filtered, and the alcohol driven off by a gentle heat.

(*a*) Of the syrupy residue left after this evaporation a small portion is diluted with three times its quantity of water; a strip of white woolen material is then allowed to lie in the solution during an hour, after which it is removed and washed repeatedly with pure water. If after this treatment the wool remains white, the absence of picric acid is demonstrated; but if picric acid be present the wool will have acquired a yellow color, that cannot be removed by washing.

(*b*) The remaining largest portion of the syrup is agitated for some time with six times its weight of pure, colorless benzol (boiling point 80° C); this is decanted off and the operation is repeated with fresh benzol, and the two liquors—the first of which has become yellow, the second having scarcely changed color—are evaporated at a gentle heat. The pale yellow resinous residue thus obtained may possibly contain brucine, strychnine, colchicine, or colocynthin. To ascertain this, three portions of the resin are placed on a porcelain capsule, one is treated with nitric acid (sp. gr. 1·33 to 1·40), another with concentrated sulphuric acid, and the third, after a few morsels of red chromate of potash have been added, also with sulphuric acid. A red color produced by the nitric acid indicates brucine with certainty, and a violet color, colchicine. A red color produced by sulphuric acid indicates colocynthin, and a purple violet produced by sulphuric acid and bichromate of potash reveals strychnine. Resin, in which one or other of these colorations is produced, possesses an extremely bitter taste; that in which the coloration does not take place is also bitter, but the bitterness recalls the well-known hop flavor.

(*c*) The syrup which has been treated with benzol is freed, by gently heating, from the small quantity of benzol remaining and agitated twice with pure, colorless amylic alcohol (boiling point 132° C.). The first portion of the alcohol acquires a more or less wine or golden yellow color. It would take up any picrotoxin or aloes if present, and thereby acquire a strongly bitter taste. If neither of these two substances be present, the amylic alcohol does not become bitter, because neither the hop bitter, nor the remaining four bitter principles—absinthin, gentipicrin, menyanthin, and quassiin—are soluble in it.

In order to distinguish picrotoxin from aloes, a portion of the first obtained amylic alcohol solution is poured upon glass and allowed to evaporate spontaneously. If a fine, white crystallization be formed picrotoxin is present; if not aloes is present, and can also be recognized by its peculiar saffron-like odor.

(*d*) The syrup which has been treated with benzol and amylic alcohol is freed by means of blotting paper from the small quantity of amylic alcohol adhering to it—evaporation by heat being impracticable in consequence of the high boiling point of the alcohol—and shaken with anhydrous ether. This takes up the hop bitter yet present and absinthin. After evaporation the latter is easily recognized through its wormwood-like aroma; it also gives a reddish yellow solution with concentrated sulphuric acid, which changes quickly to an indigo blue color.

(*e*) After treating with ether the syrup has yet to be tested for gentipicrin, menyanthan and quassiin. As it is now free from the hop bitter, a decidedly bitter taste would point to one of these three substances. Any remaining ether is removed and the syrup is dissolved in water, and filtered; to one portion is added strong ammoniacal solution of silver, and it is then heated. If it remain clear quassiin would be present; if a silver mirror be formed it would originate either with gentipicrin or menyanthin. Another portion is evaporated to dryness or porcelain, and concentrated sulphuric acid added. If while cold no change of color take place, but in heating it becomes carmine red, gentipicrin would be present; menyanthin would give a yellowish brown color, gradually changing to violet.

A METHOD OF INCREASING THE SOLUBILITY OF SALICYLIC ACID.*

The solubility of salicylic acid is enormously increased by the addition of borax to the water, so that as much as ten parts of the acid can be dissolved in 100 parts of water, if eight parts of borax be present. This discovery we owe to Dr. H. Bose, assistant in the Surgical Clinic at Berlin, who has contributed a paper of much interest to the *Berliner Klinische Wochenschrift* (No. 28, July 12), to which we are indebted for the following details: The solution should be made by first dissolving the borax with the aid of heat, and then gradually adding the salicylic acid to the boiling fluid. Since commercial samples of both these drugs are not chemically pure, a small amount separates, and requires to be filtered off on cooling. The filtrate is a clear yellowish or light brown fluid, according to its concentration. The proof that the addition of borax does not convert more than a part of the salicylic acid into salicylate of soda —a salt devoid of antiseptic properties—is easily shown; for if we dissolve 6·9 parts of the acid in 100 parts of boiling water, and then add 2·89 parts of bicarbonate of soda, the carbonic acid in the latter is set free, while the soda combines with the salicylic acid, and on cooling there is such an abundant deposition of the excessive acid that the whole liquid becomes nearly solid, owing to the formation of crystals. Now, if the whole be reheated until the acid is completely dissolved, and then 3·58 parts of boracic acid added, no deposit of any kind occurs on cooling.

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* From the *Medical Times and Gazette.*

The most suitable strength in which the above solution can be used for direct application to wounds, is, according to Dr. Bose's experience, one which contains from 2½ to 5 per cent. of salicylic acid, and to 2 to 4 per cent. of borax. Solutions containing more than 5 per cent. of acid are too irritating, and give rise to a very abundant capillary hæmorrhage, if applied to the surface of a fresh wound. Dr. Bose speaks highly of the result obtained with the boro-salicylic dressing, in a number of cases of removal of small tumors. The operations were all performed without the spray, and only the sponges and forceps used were cleansed antiseptically with the above solution. The wound was thoroughly washed with the same liquid, and then a thick layer of salicylic wadding, also soaked with it, was laid on its apposed edges, so as to reach several finger's breadths beyond them, and fixed by means of a bandage; catgut was used to tie any vessels requiring ligature. In those cases where the edges of the wound could not be accurately brought together, Dr. Bose put in catgut sutures, and then filled the spaces between the edges with the salicylic solution, by means of a small syringe, and applied the wadding over all. The greater number of the cases thus treated healed by first intention, without the formation of a drop of pus.

Dr. Bose concludes his paper by stating that he has as yet no experience of the value of the boro-salicylic acid solution in dressing *large* wounds, and that he has not found it invariably successful in the case of small ones.

SULPHURIC ACID IN VINEGAR.

BY J. C. THRESH.

The detection of free sulphuric acid in the presence of sulphates, other salts, acetic acid, and extractive, is a matter of considerable difficulty; and as for estimating the proportion of this adulterant, no method yet published will estimate it even approximately.

The conflicting results obtained by analysis of repute, while examining the same sample of vinegar, show the necessity for some process being devised which shall both detect and estimate this acid with some degree of accuracy. For this purpose I undertook the following experiments, and am tempted to believe that the result is the discovery of an easily applied method which will detect with certainty less than ·01 per cent. of free mineral acid, and will estimate it accurately. Most of these experiments were made with a sample of vinegar that contained in each 100 c.c. ·120 SO_3 and ·0725 Cl. By no test could I detect any trace of free sulphuric acid, and I therefore concluded that the sample was genuine, and this conclusion was fully verified by the results of the experiments detailed below.

My first trials were with the ordinary process of obtaining the vinegar extract, treating with strong alcohol, adding water, boiling off the alcohol, and estimating the H_2SO_4 in the solution thus obtained. It is needless detailing the results, as they were far from approximate, and when less than ·10 per cent. of sulphuric acid was present, scarcely a trace of it could be detected in the alcoholic solution.

My next attempt was to render the calcium oxalate test, recently proposed by M. Strohl, more delicate and, if possible, to render it quantitative. In the latter object I have so far failed, but I think that the following modification of the process will detect ·10 per cent. of sulphuric acid, and can be readily applied by any one with very little trouble. Take two beakers or flasks, and place in each 2 ozs. of the vinegar to be examined; to one add 5 or 6 drops of liquor ammonia, and then to both 10 drops of the solution of ammonium oxalate (B. P. appendix). The one to which the ammonia was added will become distinctly turbid; the other, if it contains more than ·100 per cent. of H_2SO_4, will remain perfectly clear; with ·070 per cent. it will be turbid, but only slightly so when compared with the other.

My next experiments were made to discover if sulphuric acid would decompose its equivalent of sodium or other chloride present or added to vinegar, so that if the amount of Cl in a sample of vinegar were known, the amount of H_2SO_4 present in it could be determined by the loss of Cl, which would or should result from the evaporation of the vinegar and ignition of the residue. The following table gives the results obtained. The vinegar employed contained ·0725 Cl in each 100 c. c., as determined gravimetrically from the vinegar itself. The Cl in the ash estimated volumetrically corresponded to ·0720 Cl. Since one molecule of H_2SO_4, or 98 parts, will decompose a chloride with liberation of 2 molecules of HCl containing 1 molecule or 71 parts of Cl (Cl_2), the amount of H_2SO_4 represented by the loss of Cl is readily calculated.

Experiments 2 and 4 clearly prove that sulphuric acid in dilute solution is incapable of decomposing sodium chloride, and that when concentrated by evaporation the presence of organic matter prevents in part this decomposition taking place. Experiments 5 to 10 were conducted as follows: 100 cubic centimetres of vinegar were placed in a platinum dish on the water bath, a known quantity of standard H_2SO_4 solution (containing ·049 H_2SO_4 in each c. c.) was added from an accurately graduated burette, and then by means of a pipette, a certain quantity of a standard solution of barium chloride, each c. c. of which contained ·005 of chlorine (made by dissolving 34·134 $BaCl_2$ in water to 1 litre, and titrating a portion with standard silver solution to determine if correct). The whole was then evaporated to dryness, the residue thoroughly charred, and successive portions of water boiled in the dish until all soluble matter was removed. Finally, this filtered solution was titrated with silver solution (each c. c. of which represented ·00355 Cl), neutral potassium chromate being used as indicator. The results thus obtained are somewhat too high, since the $BaSO_4$ carries down with it some chloride which is not afterwards recovered by washing.

In an experiment with vinegar to which $BaCl_2$ had been added, and the $BaSO_4$ filtered out previous to evaporation, the loss of Cl represented ·0838 H_2SO_4, whereas only .0612 had been added. Experiments 11 to 13 were made with 50 c. c. of vinegar, 20 c. c. of the $BaCl_2$ solution being added. The residue was ignited gently for some time, until it could be readily detached from the dish. It was then rubbed to fine powder in a mortar, transferred to a beaker and boiled with about 150 c. c. water for ten minutes. A little pure $NaHCO_3$ was added to the solution (previous to ebullition) till the reaction was faintly alkaline, to remove excess of barium, and in the hope that it would decompose the chlorides carried down by the $BaSO_4$. The results, as will be seen, are highly satisfactory.

	Amount of H_2SO_4 added to 100 c.c. of the vinegar.	Amount of Cl added to the 100 c. c.	Total Cl present before evaporation.	Cl found in the char.	Loss.	Amount of H_2SO_4 calculated from loss of Cl.	Error.
1.	none	none	·0725	·072	none	none	none.
2.	·098	none	·0725	·062	·0105	·0145	·0835 deficient.
3.	·098	·187 as NaCl	·2595	·2550	·0345	·0476	·0504 "
4.	·098	do.	do.	·2165	·0430	0592	·0388 "
5.	·196	·250 as $BaCl_2$	·3225	·1620	·1605	·2200	·024 excessive.
6.	·098	·100 "	·1725	·1030	·0695	·096	·002 deficient.
7.	·245	·250 "	·3225	·1225	·2000	·276	·032 excessive.
8.	"	" "	"	·1320	·1905	·262	·017 "
9.	·049	·100 "	·1725	·1290	·0435	·060	·011 "
10.	·294	·250 "	·3225	·1205	·2020	·278	·016 deficient.
11.	none	·100 "	·1725	·1700	·0025	·003	·003 excessive.
12.	·196	·200 "	·2725	·1270	·1455	·200	·004 "
13.	·196	·200 "	·2725	·1280	·1445	·199	·003 "
14.	(Another sample of vinegar) none	·200 "	·240	·1620	·0780	·1076	supposed correct.
15.	·050	·200 "	·240	·1240	·1160	·1600	·002 excessive.

In experiments 14 and 15, a different vinegar was employed. It contained in each 100 c. c., ·040 Cl., and ·112 SO_3, but although the SO_3 was less than that contained in the other vinegar, the calcium oxalate test showed that most of it was in the free state. My analysis performed as in 11—13, showed the presence of ·1076 of free sulphuric acid (H_2SO_4) in the 100 c. c., and this was confirmed by experiment 15.

The result of the analysis of the sulphates in the two vinegars would stand thus:

	1st Vinegar.	2d Vinegar.
Free H_2SO_4 per gallon, - - -	- none - - -	73·36.
Combined ditto " - -	103 grains - -	23·24.
Total, - - - - -	103 grains - -	96·60.

The test for free sulphuric acid in vinegar given in the B. P. would have condemned both these alike, since it does not distinguish between the sulphates and the free acids.—*London Pharm. Journal.*

Buxton, June 23, 1875.

A BRILLIANT LIGHT.—Fill a small vessel of earthenware or metal with perfectly dry saltpetre or nitre, press down a cavity into its surface, and in this cavity place a piece of phosphorus; ignite this, and the heat given off melts a sufficient quantity of the nitre to evolve oxygen enough to combine with the phosphorus, and the effect is to produce the most magnificent white light which chemistry can afford.

THE DETECTION OF MINERAL ACIDS IN VINEGAR.

The fact that the violet of methyl-aniline undergoes no change of color in contact with acetic acid, whilst the least trace of a mineral acid changes it to a greenish-blue, is suggested by M. Witz as a ready method of detecting the presence of free mineral acid in vinegar. To ascertain the relative strength in acetic acid and in mineral acid it would be sufficient to ascertain by means of an acidimetric solution, (1) the point of neutrality to litmus, which would correspond with the sum of the acids; and (2) the point of neutrality in respect to the methyl-aniline violet, which would correspond to the mineral acids only. The difference would give the quantity of acetic acid.

REMARKS ON THE MICROSCOPE.

BY GEORGE CALLAHAN.

Many persons not accustomed to the use of the microscope suppose it a very difficult matter to prepare the objects for examination, while still others have an idea that no preparation whatever is needed—that the simple matter of length, breadth or thickness, opacity or transparency, is of no consequence whatever, but that all things, little or big, are subject to its "wonders."

Now, both are, in a measure, right. Some objects are very easily prepared for examination, and some can only be mounted by those possessed of great experience, requiring in their preparation the most extreme delicacy of manipulation.

Now, there are many things that can be examined without preparation, especially under a low power, such as the various minute parasites found on dried fruit, the mites in cheese, and many small insects, the wings of flies and lesser creatures, etc., all that is needed being that they be supported on a slip of glass on the stage of the instrument. But to properly examine larger creatures than these minute things that infest our dried fruits and make our cheese so lively—insects whose size or opacity prevents the light passing from the mirror through them and the instrument to the eye—they must be subjected to a process to make them sufficiently transparent, unless, indeed, it is desired to examine them by reflected, or the top light, in which case, instead of the mirror beneath the stage, a condensing lens is used above, and the light being concentrated upon the object, its rays are reflected by it through the instrument to the eye. Some think this one of the most beautiful ways in which to exhibit certain objects, such as the elytra, or wing cases of beetles; shells, such as the foramenifera, coraline, grains of sand, and a host of things too numerous to mention.

Many objects can only be examined in this way, it being impossible from their nature to make them transparent; but if it is desired to show the peculiar structure of the legs or attenuæ of insects, the probosis of the different species of flies, or anything susceptible of being so manipulated, it is only necessary to obtain a small quantity of liquor potassa, which can be found at any drug store, and immerse the substance in it for a longer or shorter time, according to its size or texture. Some require but a few hours, or even minutes, and others several days. By keeping them in very small phials, and noticing when they change to a transparent color, it is easy to tell when to remove them. If it is a moderate-sized insect, such as a fly, it will be necessary, after taking it from the potash liquor, to put it in a saucer of clear water, and, with a camel's hair brush, press it flat to the bottom, and applying sufficient pressure, at the same time giving the brush a rolling motion, the contents of the abdomen will be expelled from the thorax. It must then be thoroughly washed to free it from all trace of the potash, otherwise crystals are apt to form after mounting, which would destroy the beauty of the object. It should then be carefully put or floated on a glass slide, and covered with a thin glass disc, which should be tied down upon it to keep it flat. After thoroughly drying, it is made more perfect for mounting by immersing for a short time in spirits of turpentine, just as it is, glass and all, after which the glass disc must be removed and a drop of Canada balsam put upon the insect, and the disc dropped upon that and pressed down, care being taken that no air bubbles are imprisoned under it. Then a gentle heat should be applied, but not sufficient to boil the balsam, as in that case only the most experienced can remove the bubbles which will form. If properly heated, the balsam will, in a short time, grow sufficiently hard to cement the disc to the glass slide, with the insect beautifully enclosed in the transparent medium. The slide should then be laid away for a few days, when the balsam which surrounds the disc may be cleaned away with a knife and small piece of cotton cloth moistened with alcohol, and if properly cleaned, will present a neat and handsome appearance. Most of the beautiful slides of insects mounted as transparent objects, which are sold by the opticians are thus prepared. Many others are mounted in cells, being enclosed air-tight between the glasses and surrounded by some preservative liquid, in which state they will retain their beauty and freshness for an almost unlimited time. I have in my possession objects mounted in this way, which I prepared some three years ago, and they are now as fine as when first mounted.

Many objects are mounted dry—simply being protected from dust by enclosing them between the glass slide and the thin glass disc, and cementing the two together by a ring of some adhesive varnish drawn around the edge of the disc or cover, care, however, being taken that the varnish is not drawn under the cover by capillary attraction. In fact, the better plan is to draw the ring on the slide and allow the varnish to dry until it is simply "tacky," when the cover will adhere perfectly. It may then be finished by an additional ring of varnish over the edge. This is generally done on a "turn-table," a little machine made for this purpose, and sold by the opticians. Extremely delicate diatoms are thus prepared. They are first boiled in nitric acid, and being washed free from all trace of that, are ready for mounting and examination. This is easier to do than to prepare objects and mount them in balsam. The diatoms are so small, however, as to be quite invisible to the naked eye, and only perceptible to the unaided vision when in masses. When obtained (and the writer knows from experience it is not always easy to obtain just what is wanted), they are surrounded and filled with earth and vegetable matter, and it is the boiling in the acid which removes and destroys this, leaving the siliceous shell of the diatom of a beautiful pearly white. These objects are considered by microscopists among the most beautiful—possessing forms of unending variety and wonderful perfection in their various delicate markings. Some are so excessively minute that their markings only become visible under the highest powers of the microscope, and are often used as a test of the quality of the lenses employed in examining them.—*Drug Reporter.*

THE INFLUENCE OF BORAX UPON FERMENTATION AND PUTREFACTION.*

BY J. B. SCHNETZLER.

During the discussion which has taken place in the French Academy between MM. Pasteur and Fremy upon the theory of fermentation, M. Dumas intervened, and pointed out that there are two kinds of ferments: those which live and multiply during fermentation, of which beer yeast is the type, and those which destroy during their action, of which diastase is the type. In reserving the name of fermentation to the chemical action produced by the ferments of the first type, M. Dumas arrived at the conclusion that fermentation is a chemical phenomenon accomplished under the necessary influence of the life of the yeast. After having studied the action of a large number of substances upon yeast, he investigated the properties of borax. He found that this body coagulated yeast, dissolved the membranes which remained suspended in an unfiltered solution of white of egg, prevented the interversion of sugar by yeast water, arrested the action of diastase, and paralyzed synaptase. This communication was the point of departure for the following experiments and observations by M. Schnetzler:

(1) *Action of Borax upon the Protoplasm of Vegetable Cells.*—(*a*) Leaves of *Elodea canadensis*, in the cells of which the protoplasm presents an easily observed rotatory movement, were plunged into a concentrated solution of borax. The plasmatic current continued for some minutes, then slackened and stopped completely. The protoplasm contracted, receded from the cell-wall, and condensed into one or two rounded masses containing grains of chlorophyll. The living matter of the cell had been killed by the borax.

(*b*) When fresh leaves of *Vaucheria clarata* were plunged intact into a concentrated solution of borax, the protoplasm was coagulated and receded from the cell-wall, which became perfectly transparent. The globules of chlorophyll were contracted and recurved, becoming crescent-shaped. When the spores of *Vaucheria* are transferred from the mother cell into water they execute some rapid movements by the aid of small

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*Abstracted from the *Comptes Rendus*, vol. lxxx., p. 473.

vibratory hairs. In a solution of borax these movements were almost immediately arrested; the protoplasm of the spore contracted and was transformed into a finely granular mass in the interior of the cell.

In a similar manner borax produced coagulation of the protoplasm in the spores of *Oidium Tuckeri* (the grape fungus), in the cells of yeast, moulds, etc.

(2) *Action of Borax upon the Animal Organism.* —(*a*) Infusoria, rotifera and entomostraca, placed in water containing borax quickly ceased to move, and then died; the contraction and coagulation of the sarcode of the infusoria being distinctly perceptible.

(*b*) The larvæ of frogs, rendered transparent by prolonged keeping in obscurity, when placed in the solution of borax manifested convulsive contractions in the muscular fibres of the tail. The circulation of the blood slackened gradually, the plasma of the blood coagulated, and in less than an hour death took place.

The preceding observations showed that borax caused a cessation of the properties by which the life of vegetable and animal protoplasm is manifested. If, therefore, fermentation is a chemical phenomenon, accomplished under the influence of the life of the yeast, borax ought necessarily to act antagonistically to fermentation. To test the correctness of this inference some experiments were made upon the—

(3) *Action of Borax upon Fermentescible Matters.*—(*a*) In October, 1872, some very ripe single grapes were placed in a concentrated solution of borax, together with an entire bunch, and kept in a closed vessel. The liquid, at first colorless, became slightly brown; but both the single berries and the entire bunch, presented after two years the same appearance, whilst there was no trace of fermentation. Although, however, the grapes were well preserved, they were not eatable. Diffusion had taken place; a great part of the sugar had passed through the skin of the grape, whilst the borax had penetrated to the interior, where it had coagulated the albuminous matter of the cells. The same result was obtained with currants. When the flasks were well closed no trace of mould was seen; but when the air had either free or limited access, a mould (*mucor*) was formed, without fermentation, accompanied by disengagement of gas. When, as a counter-test, grapes were placed in a well-closed vessel filled with ordinary water, after a time, according to the temperature, fermentation took place, with evolution of carbonic acid.

(*b*) Thirty cubic centimetres of fresh milk were placed in a test tube with 1 gram of borax. The cream quickly formed a rather thick layer in the upper portion. Notwithstanding the test tube was closed by a cork, a mould was formed upon the cream; but the remainder of the liquid underwent no acid fermentation, and retained during several months the appearance of very clear creamed milk. Afterwards, under the influence of summer heat the liquid became perfectly limpid, and deposited the casein as a soft white matter; but neither the deposit nor the liquid had an acid taste, and after three months they still had the odor of fresh milk. Fresh milk, put into a well closed test tube without borax, underwent acid fermentation in from two to three days, and became thick by coagulation of the casein.

(*c*) A piece of sheep's brain was powdered with borax. Eight days afterwards it gave off a spermatic odor; later there was a disengagement of sulphuretted hydrogen, without any appearance of putrefaction, properly so-called. The matter, after retaining a soft consistence during several months, became hard and almost horny, without any disagreable odor.

(*d*) A pound of beef was placed in a concentrated solution of borax, in a tin case, and hermetically closed. The coloring matter of the blood diffused into the surrounding liquid, as well as a portion of the soluble nitrogenous substance of the meat. After some weeks the liquid assumed a brown color, and gave off a rather disagreeable odor without any putrefacation of the meat. When the liquid was removed and the meat washed with cold water, it had an odor *sui generis*, but having no similarity to that of putrefying meat. After a year and a half, notwithstanding the heat of the summers of 1873 and 1874, this meat—the surrounding liquid having been renewed three times—had not the least odor of putrefaction. It was of a yellowish color, but as soft and tender as fresh meat. Removed from the borax solution the meat remained in the same state in the air.

(*e*) Beef, veal, and portions of sheep's brain were placed in a vessel which was filled with a solution of borax and hermetically sealed. The liquid soon became clear red, and this color remained during several months without alteration. The meat presented not the least disagreeable smell as long as access of air was prevented. Meat placed in water, in a flask hermetically sealed, became rotten in a few days.

The peculiar odor of meat preserved in borax in contact with air, the author considers to be due to the decomposition of matters which result from the metamorphosis of substances that constitute the muscular and inter-muscular fibre. Although probably the use of borax will not be applicable to the preservation of meat for culinary purposes, the author considers that it may be economically substituted for alcohol in the preservation of anatomical specimens.. Moreover, its power of suspending life in the lower organisms would seem to indicate its probable utilization in the treatment of wounds, etc.—*London Pharm. Jour.*

THE USE OF THE COAL-TAR BENZINES FOR EXTRACTING ALKALOIDS.*

BY G. BOIRAUX AND E. LEGER, OF PARIS.

The object of the writer is to do away altogether with the use of alcohol and its derivatives ether and chloroform, in the preparation of the more important alkaloids. The tax which, before the last war, was already a heavy one in France, has since then become so onerous as to almost preclude the possibility of competing on any terms with other countries where the manufacture of fermented liquors is nearly free of duty. As we are not much better off in America as regards the cost of alcohol, we think that the processes discovered by the writers will be found both useful and interesting. We have seen samples of the alkaloids

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*Translated for *The Druggists' Circular* by J. Creuse.

thus obtained; they all present a creditable appearance, and some of them look remarkably handsome. This being premised, we proceed to relate the processes, as nearly as possible, as they are given by Messrs. Boiraux and Leger.

"In our work," say the writers, "our chief care has been to find plain and economical methods of making certain alkaloids and proximate principles. After some unsuccessful attempts, we have found that the various coal-tar products commercially known as *benzine* and *benzole* are solvents which perfectly answer the purpose. They dissolve a great number of alkaloids, and have over alcohol this advantage, that, having no action on the extractive principles, they give at once nearly colorless solutions, from which almost pure alkaloids can be obtained without the use of animal charcoal.

Among the alkaloids soluble in benzine, some cannot be obtained in crystals when the menstruum is evaporated, and in the case of the crystallizable ones it is often advantageous to extract them from the benzine by means of acidulated watery liquid, to free them from various fatty or resinous matters, before the final precipitation. Some alkaloids, such as *strychnia* and *cinchonia*, are very sparingly soluble, yet their solubility varies according to the kind of benzine employed.

In the commercial preparation of quinia, heavy oils—that is, the least volatile ones—are exclusively used, for they are not only cheaper, but also better solvents than the lighter products. According to our experiments, the greater dissolving power is solely due to the presence of carbolic acid; hence we were led to try whether ordinary benzine could not, by the addition of that acid, be made to dissolve bodies on which it will not act under ordinary circumstances. Our surmises proved correct, and by adding to benzine only five per cent. of carbolic acid, we were able to dissolve without heat large quantities of strychnia and cinchonia. Morphia proved less tractable, but a new process would scarcely offer any advantage over Gregory's.

We have used for our researches, (1) benzines boiling between 122° and 212° Fahr., commercially called *benzole;* (2), ordinary *benzine*, boiling between 176° and 248° Fahr.; (3), the last one carbolated in the proportion of five parts of carbolic acid to ninety-five of benzine.

It is in all cases necessary to dry thoroughly all the substances, vegetable powders or precipitates, which are to be treated by benzine. The precaution is of the utmost importance, for benzine cannot permeate, and therefore cannot exhaust a substance dampened with water. These preliminary explanations being given, we shall now describe the different processes.

ATROPIA.

This is undoubtedly one of the alkaloids the most difficult to prepare, on account of its instability and its easy alteration by the powerful re-agents employed to extract it. Indeed, if the re-agents be in too great an excess, if they remain too long in contact, or even if too much heat be used, the result of long and difficult manipulations will be completely negative. For these reasons our process will be minutiously described.

All the parts of belladonna contain atropia, and the alkaloid can be extracted from all of them; but we prefer the aqueous extract made from the dry leaves, because it contains a more constant proportion of active principle and less extractive matter than the same preparation made from the root. We use *benzole* as a menstruum. The following is our *modus operandi:*

Aqueous extract of belladonna leaves......	16 troy ozs.
Soda-lye, 36° Baume...........................	4 "
Benzole..	1 gallon.
Distilled water, sufficient.	

The extract is placed in a porcelain dish floating on cold water, and the lye is added by small portions, with constant stirring, to mix them thoroughly. The immediate effect of the addition is to cause the mixture to become liquid and warm, and it is with the intention of avoiding an excessive heating that the bath of cold water is recommended. Lastly, enough distilled water is added to bring the mixture to the consistence of a thick syrup, when it is poured by small portions in a three-quart flask containing two quarts of benzole, the whole being well shaken after each addition. When all the extract has been introduced, the liquid is allowed to rest about fifteen minutes, and the liquors separate into two distinct layers: the upper one is benzole, holding atropia in solution, the lower the partly exhausted extract. The first being carefully separated and set aside, the extract is poured with the same precautions into another flask containing the balance of the benzole. The two solutions, which now hold all the atropia, are united, and shaken five minutes with the following mixture:

Sulphuric acid..................	75 grains.
Distilled water....................................	2½ ounces.

After a short rest, the lower layer is separated by means of a funnel, and the benzole is shaken again with the subjoined liquid:

Sulphuric acid	30 grains.
Distilled water	6 drachms.

The two watery solutions contain all the atropia in the shape of sulphate; they are united and into a ten-ounce flask, where caustic soda is added, drop by drop, until no more precipitate ensues. Then three ounces and a half of well-rectified benzole are added and thoroughly shaken during ten minutes; the greater part of the atropia is thus taken up by the benzole, which is decanted and replaced by one and a half ounces of new benzole. The second washing completes the extraction of the alkaloid, for the alkaline liquor becomes perfectly limpid. The reaction is hastened and rendered easier by placing the flask in a water-bath, not exceeding 122° Fahr. These different treatments enable the operator to concentrate into five ounces of liquid all the atropia contained in one pound of extract of belladonna. The benzole solution is then filtered through white paper, evaporated in a small retort on a water-bath till it is reduced to one-half, when the residue, on being poured into a small porcelain dish, deposits the atropia in long, silky, perfectly white needles.

REMARKS.—The process being thus described, we wish to add a few important remarks, which, if placed in the middle of the description, might have interfered with the clearness of the explanation. The extract of belladonna which we use is made by maceration in cold water. The entire leaves are soaked two days in water, then thrown on a sieve and washed with more of the same liquid, until the washings are colorless, when the liquors are strained and evaporated in the usual manner. We purposely avoid the use of pressure, and especially the application of heat, so as to dissolve as little as possible of the mucilaginous matters which, during the treatment of the extract of the benzole, form a sort of gelatinous emulsion long in separating. When the extract and the caustic soda are mixed together, the consistence of the solution is of the greatest importance, for if the mixture be too thick it is difficult to exhaust, while if it be too thin the separation of the liquids becomes difficult. We recommend to ***pour the extract into the benzole***, and not the benzole into the extract, as some might be tempted to do, for it is the only way to prevent the formation of the emulsion spoken of. If care be taken to pour the alkaline extract into the benzole in such a manner as to obtain a thin stream, all danger is avoided, and the separation of the liquids is, in all cases, prompt and easy. When the sodic extract is mixed with the benzole for the second time, the same way of proceeding is to be followed. In this second operation it is important to abstain from washing with water the flask which contained the extract, as it would have the effect of emulsionizing the whole mass. Ten drachms of water added to the quantities above mentioned have, in our hands, produced this very result.

The proportion of benzole we use may seem excessive in comparison with the quantity of atropia contained in one pound of extract—about 45 grains—for we have found from experience that one part of the alkaloid is soluble in fifty of benzole, but we operate thus for two reasons: the first is the very small quantity of active principle disseminated in a large mass of insoluble matter, and the second, the necessity for avoiding emulsions, of keeping a certain relation between the volume of the menstruum and that of the liquid to be extracted. The quantities we indicate have always proved appropriate in practice. Besides, the same benzole may, without redistillation, be used for several operations.

Of all the alkaloids atropia is probably the one which it is easiest to transfer from one menstruum into another. Benzole, for example, takes it up completely from alkaline liquors, while acidulated water totally abstracts it from that solvent. Such is not the case with other bodies, as the sequel will show.

Our process may, at first sight, appear complicated, yet it works quite rapidly, for it consists almost altogether of simple mixings. It is only near the end, and on small quantities of liquid, that we use heat. In less than three hours we have prepared forty-five grains of perfectly white atropia.

SANTONIN.

(Levant worm seed). Semen contra, whole..	2 pounds.
Powdered slacked lime	1 pound.
Water	20 pints.

In a copper vessel, boil for half an hour the drug with ten pints of water and eight ounces of lime. Throw the whole on a strainer and express. Make a second decoction with six pints of water and five ounces of lime, and a third one with four ounces of water and three ounces of lime; the drug is then exhausted. The strained product is a liquor strongly colored yellow by the peculiar resin of the seeds, and rendered muddy by the excess of lime in suspension. Now sulphuric acid is added to the liquid until it shows a decidedly acid reaction; the whole is allowed to rest twenty-four hours, and the precipitate is collected on a filter and dried; it weighs then about one pound, and is composed of santonin and sulphate of lime. It is finely powdered, and introduced into a four-pint mattress containing two pints of benzine, which is heated in a water-bath for half an hour, with constant agitation, till the temperature reaches about 172° Fahr., when the whole is thrown on a filter and washed with one pint of warm benzine. The liquor, which is yet colored yellow by the resin, is re-transferred to the mattress with five drachms of powdered bone-black, and set on the water-bath; after about fifteen minutes it is completely bleached. The apparatus—water-bath and all—being withdrawn from the fire, is left to rest for a short time, when the liquor is poured on a filter large enough to insure rapid filtering, and to give the santonin no time to crystallize in the funnel. On cooling, nearly the whole of the santonin crystallizes out. More of the active principle may be obtained by evaporation, but we prefer to keep the mother liquors for subsequent operations.

REMARKS.—Lime is, in our opinion, the only alkali that can be used with success, for soda and potassa are so active that they dissolve the whole of the drug. Lime has also the advantage of forming with sulphuric acid an insoluble salt, which, by becoming intimately mixed with the resinous matter, renders the precipitate easy to powder and to extract. It is better to employ the seeds whole, as the powder, on being boiled, forms a magma from which it is very difficult to obtain any liquid. The rest of twenty-four hours, which we recommend after the treatment with sulphuric acid, is necessary to separate the santonin, for the santonin of lime is not immediately decomposed by acids; some time is needed for the whole of the santonin to precipitate. Pure santonin is sparingly soluble in cold benzine, but the presence of the yellow resin considerably increases its solubility, as the following will show. If the yellow solution of santonin in benzine mentioned above be distilled off until it is reduced to five ounces, several days will elapse before the crystals appear, while if boneblack be added that body will absorb the yellow resin, and the curious fact will be observed that the more the liquor is heated the larger is the quantity of santonin deposited, till, on reaching 120° or 140°, the whole sets in a mass. For that reason, in our process nearly the whole of the santonin is obtained without evaporation.

VERATRIA AND DELPHINIA.

Powdered sabadilla seeds..............	1 pound.
Soda-lye, 36° Baume.....................	5 ounces.
Water................	5 ounces.

The powdered seeds, moistened with the lye and the water, are left for two days in a closed vessel dried in an oven, and exhausted in a percolator, with enough boiling benzine to complete three pints of liquid.

The liquor is introduced into a tubulated retort, with a solution of eighty grains of tartaric acid in three pints of water; the mixture is reduced by distillation on a sand-bath till there remains only about sixteen to twenty ounces of a nearly colorless liquid, which contains the veratria in the state of a tartrate, with a small quantity of unsaponified fixed oil floating on top of it. After cooling, the liquor is filtered through a white paper filter, moistened with water, and the filtrate is precipitated with ammonia. The veratria is obtained perfectly white, in the shape of a voluminous magma, which only requires to be washed, drained and dried.

Two pounds of the seeds give, by this method, about 150 grains of alkaloid. *Delphinia* may be obtained in the same manner from stavesacre seeds.

REMARKS.—When the powdered seeds are moistened with the alkaline liquid, the mass is to be simply stirred with a wooden spatula, and not pressed with a pestle in a mortar, for in the latter case sometimes cakes are formed which, on drying, become so hard as to be comminuted with difficulty. We recommend to keep the mass in a close vessel, to prevent the soda from becoming carbonated. In the caustic state the alkali forms with most of the fixed oil of the seed a soap insoluble in benzine, and the excess of soda being, during the desiccation, changed into a carbonate, facilitates, by its efflorescent property, the powdering of the mixture. The distillation of the percolate with an acid solution is the only way to transfer the whole of the veratria into the aqueous liquid; simple shaking, sufficient with atropia, is in this case only partly successful.

STRYCHNIA AND BRUCIA.

The two alkaloids exist, in varying proportions, in several plants of the Strychnos family. False angustura bark, for instance, contains chiefly brucia; in St. Ignatius' bean strychnia predominates, while in nux vomica both alkaloids are found in nearly equal quantities. We shall describe first our method for extracting the two from the last-named article.

Nux vomica, rasped	2 pounds.
Water	28 pints.
Sulphuric acid	9 drachms.

The drug is exhausted by three successive decoctions: (1), with twelve pints of water and five drachms of acid; (2), with eight pints of water and two and a half drachms of acid; and (3), with eight pints of water and one and a half drachms of acid. The two first decoctions are to last one hour, and the third half that time; after each treatment the marc is submitted to strong pressure. The united liquors are then evaporated to eight pints, and a sufficiency of milk of lime is added. The precipitate, thoroughly dried, is exhausted by percolation with enough *carbolated benzine* to obtain one pint of liquid, which is introduced into a retort with the following solution:

Tartaric acid	4 drachms.
Water	2 pints.

This is distilled until the whole of the benzine has passed off, when the retort is found to contain about one pint of a transparent liquid, which is an aqueous solution of the tartrates of strychnia and brucia, with a small quantity of fatty or resinous matter occasionally floating on top. The liquor is filtered and precipitated with ammonia, and the precipitate, after washing and drying, is a white powder composed of a mixture of strychnia and brucia. To separate them advantage is taken of the solubility of brucia and the complete insolubility of strychnia in light benzines. The powder is introduced into a small mattress with sufficient benzole, heated on a water-bath for fifteen minutes, and the clear liquid is decanted into a filter. This is repeated until a few drops of the washings, on being evaporated on a watch-glass, give no red coloration with nitric acid; three washings are usually sufficient. The solution, properly evaporated in a small retort, gives, on cooling, abundant crystals of brucia.

REMARKS.—The use of sulphuric acid has the advantage of facilitating the extraction of the alkaloids, and also of forming with the lime a precipitate easy to separate and to exhaust. The substitution of muriatic acid gives a mucilaginous precipitate very difficult to handle.

When *brucia* alone is desired, the false angustura bark is to be treated as follows:

False angustura bark, bruised......	2 pounds.
Water	28 pints.
Muriatic acid..........................	4 ounces.

Exhaust by decoction in the same manner as nux vomica, using two ounces of acid for the first and one ounce for each of the two following decoctions. The united liquors, reduced to two pints, are precipitated by milk of lime, and the precipitate is dried. This—it weighs about 4 ounces—is heated on a water-bath with one pound of benzine, and the whole is thrown on a strainer; the marc is washed with one pound of warm benzine, and the washings are distilled with the following mixture:

Tartaric acid..........................	2½ drachm.
Water	3 pints.

When cold, the liquid remaining in the retort is precipitated with ammonia, and pure brucia obtained.

CANTHARIDIN.

Our process is somewhat different from those given by other writers who have also recommended the use of benzine for the same purpose. It is as follows:

Powdered cantharides..................	1 pound.
Boiling benzine	4 pints.
Bisulphide of carbon...................	sufficient.

This powder being packed in a percolator, the benzine heated on a water-bath in a flat-bottomed mattress, is poured on it by small portions. The lixiviation works with perfect regularity, and the percolate presents a greenish-brown color. When no more liquid passes, the receiver is changed, and the remaining benzine is displaced by water. The two liquids are united, filtered, and distilled on a water-bath, until only two ounces and a half of liquor remain in the retort. This, being poured into a porcelain dish, was found, after twenty-four hours, to have concreted into a greenish mass studded with bright needles of cantharidin. The whole is thrown on a filter, and washed with bisulphide of carbon; a small quantity only is sufficient to extract all the fatty matter, the whole of the cantharidin being left behind in the shape of long and silky white needles. On being exposed to the air for a few hours, they lose all kind of smell.

From 16 troy ounces of commercial cantharides of an unknown origin, we have obtained 30 grains of pure cantharidin, while twice that quantity of flies, gathered by ourselves in the Department of Loiret, gave us 75 grains of the same active principle. Another time, fearing that the presence of the fatty and coloring matters might lessen the solubility of cantharidin in benzine, we exhausted, with bisulphide of carbon, 16 troy ounces of Loiret cantharides, till the menstruum passed quite colorless; the drug thus treated yielded to benzine 37½ grains of pure white cantharidin, a proof that our process is a correct one.

QUINIA.

This most important of alkaloids was formerly extracted by Pelletier and Caventou, the discoverers, with acidulated water, lime, and alcohol. Lately alcohol has successfully been replaced by heavy petroleum oils, and the price of the alkaloid has remained within relatively moderate figures. We will show that coal-tar oils may be employed with equally good results to obtain a pure product. [Petroleum is, in France, subject to a heavy duty. The *Petroleuses*, we suppose, are to be thanked for that. —Ed. D. C.]

Calisaya bark (3 per cent.)	2 pounds.
Water	28 pints.
Muriatic acid	4 ounces.

Boil the bark during one or two hours with twelve pints of water and two ounces of acid; strain, and repeat the decoction twice with eight pints of water and one ounce of acid each time. Precipitate the united liquors with sufficient milk of lime. The precipitate, carefully dried—it weighs then about five ounces—is heated on a water-bath with enough benzine to complete one pound of liquor, which is filtered and introduced into a retort with the following mixture:

Tartaric acid	1 ounce.
Distilled water	2 pints.

When about two pints have distilled off, the whole of the benzine is eliminated, and the contents of the retort, on being filtered, give about one pint of a nearly colorless liquid. Add to it a slight excess of ammonia, dry the precipitated quinia, and dissolve it in half a pound of benzole heated on a water-bath. Decant the solution, and evaporate it to one-half in a retort, when, on being left to itself for a few days, it lets down voluminous crystals of quinia, which, in the air, effloresce with great rapidity.

CINCHONIA.

Huanuco bark	2 pounds.
Water	28 pints.
Muriatic acid	4 ounces.

Operate in the same manner as for quinia. Wash the lime-precipitate with boiling benzine, to separate the small quantity of quinia present; then exhaust it with enough carbolated benzine to obtain one pound of liquid; this is introduced into a retort with the following mixture:

Tartaric acid	1 ounce.
Distilled water	2 pints.

All the benzine and the carbolic acid distill off, leaving behind a nearly colorless solution of tartrate of cinchonia, with some floating resinous matter. After cooling, the liquor is filtered and precipitated with ammonia, in the same manner as quinia. The alkaloid thus obtained is perfectly white.

NARCOTIA.

As narcotia and codeia are the only principles of opium soluble in benzine, they are the only ones that can be extracted with that liquid. To prepare narcotia one pound of opium, previously exhausted with cold water, is macerated in eight pints of water and six drachms of muriatic acid, strained and precipitated with a slight excess of ammonia. The precipitate, washed and dried, is heated on a water-bath with eight ounces of benzine, and the solution is filtered hot. The narcotia separates on cooling; a second crystallization is sufficient to render it perfectly white.

ACONITIA.

In a properly disposed percolator, coarsely ground aconite root is exhausted with boiling water containing one per cent. of tartaric acid. The percolate is evaporated down to the consistence of a thick syrup, when enough soda-lye is added to give it a strongly alkaline reaction. After cooling, the mixture is poured into benzole in the manner already described for atropia. The benzole, on being shaken with a little acidulated water, loses the alkaloid which may be obtained from the aqueous solution by simple precipitation with ammonia; the aconitia, being washed and dried, is found in the shape of a white powder.

COUMARIN.

Coumarin, the aromatic principle of *melilotus*, *asperola odora*, etc., is found in moderately large quantities in the tonka-bean, especially near the surface. It may be obtained by simply washing, with cold benzine, the whole beans placed in a funnel. The liquor, after proper concentration, lets down the coumarin in voluminous white crystals.

BLACK PEPPER (*Piper nigrum*, LIN) is cultivated in the East and West Indies, Sumatra, Borneo, Siam, and other places within the tropics. The berries are gathered before becoming quite ripe, in order that they may retain their acrid properties more perfectly, and are died in the sun, the stalks being separated by rubbing with the hand. *White pepper* is prepared from the matured fruit, from which the outer fleshy covering is removed by maceration, etc. The heavy grains are most esteemed in the market; the finer sorts, chiefly from Malabar or Sumatra, constitute the *shot pepper* of trade.

RATAFIA.

The origin of this, the cognomen of so many delicious and semi-medicated cordials, seems to be obscure. Some say it came to us Europeans from India, others from the French word *rectifie* (rectified); but the more likely supposition would seem to be that it is a coinage from the two words *rack* and *tafia,* the latter being the Creole title of the aromatic rums derived in the course of sugar manufacture in the islands of the Antilles.

The French have perhaps made greater use of cordial liqueurs than other people, and their industrious fabrication, or, more courteously, distillation of them has led to their becoming favorites in all civilized centuries. Their post-prandial adaptability is well known, and among the prime favorites, who has not heard of and tasted "la grande Chartreuse," more or less monkish in its origin, according as it is *le vrai* or the *contra-facon.* Then there is the Curacoa, of which many types exist, emanating from several different nationalities. We mention also *l'Anisette,* that sugary liqueur which Bordeaux so largely manufactures and exports. More modern monkish and lay cordial inventions have also arrived in favor, among which we cite "la Benedictine," "la Berrichone," "le liqueur d'or," in the last of which the floating particles of gold foil produce a very pleasing effect, and serve to give some eclat to a cordial otherwise of a very commonplace type.

Without pretending to be able to give our readers the formula of these best known liqueurs, we can in this article present to them some of valuable recipes of several of the ratafias, which they may regard as being derived from an authentic source. To define more minutely the title ratafia, we add that this name is given to those preparations which may be designated as medicated, but which nevertheless are employed more as table liqueurs than as remedies, though they in general possess highly stomachic characteristics.

These liqueurs are prepared in various manners, but generally the aromatic ingredients are macerated in the alcohol, then filtered and sugared to the proper consistency. Another step in their perfection is made by distillation and further sugaring of the residue. This product is called the cream, by distillers. With this may be mixed the syrups of various fruits, thus resulting in the desired flavors. Such preparations are, strictly speaking, ratafias. They may be left their natural color, but are more frequently artificially tinted in different shades, suggested by the fruits from which they are derived. As regards this last process, it will hardly be a mystery to any pharmacist. It is very essential that the alcohol employed shall be as inodorous as possible. We subjoin a few formulæ:

Maracshino.

Kirsch-wasser	300	grammes.
Water	2,400	"
Spirit of Raspberries	200	"
Sugar	600	"
Alcohol, 90 per cent	800	"

Vanilla.

Vanilla Beans	4	grammes.
Alcohol, 82 per cent	500	"
Filter and add sugar	1,000	"

Orange Flower.

Distill a mixture of

Alcohol, 88 per cent	4,000	grammes.
Oil of Lemon	8	"
Oil of Bergamotte	8	"

To 4,000 grammes of the product add

Orange Flower Water	4,000	"
Water	7,000	"
Sugar	2,000	"

Filter.

Curacoa.

Macerate for 8 days—

Bitter Orange Peel	500	grammes.
Cloves	8	"
Cinnamon	8	"
Alcohol	7,500	"

Filter and add

Sugar	2,500	"
Water	1,000	"

Anise.

Macerate together—

Anise Seed	45	grammes.
Alcohol	1,500	"
Water	1,000	"
Sugar	125	"

After eight days, filter and add

Sugar	500	"
Water	500	"

Ratafia Liqueur, Raspail.

Macerate, during 15 days, as follows:

Angelica Root	15	grammes.
Angelica Seed	15	"
Calamus Aromatic	4	"
Mace	$\frac{1}{10}$	"
Myrrh	2	"
Cinnamon	2	"
Cloves	1 1-5	"
Aloes	1 1-5	"
Vanilla	1 1-5	"
Saffron	1 1-3	"
Alcohol	3,000	"
Add Sugar	500	"

Filter.

Quince.

Macerate together, 15 days—

Syrup of Quinces	3,000	grammes.
Alcohol	1,500	"
Sugar	1,250	"
Bitter Almonds, peeled	15	"
Cinnamon	12	"
Coriander	8	"
Mace	4	"
Cloves	3	"

Filter.

THE KEEPING OF DISTILLED WATERS.

A correspondent of the *Chemist & Druggist* contributes the following:

The late William Ince, of Southampton street, Covent Garden, wrote a paper some years back on distilled waters and their preservation in a diluted state. The plan he recommended, from long personal experience, was to provide wooden tanks of requisite capacity, which were either tinned or lined with sheet zinc. They were closed by a large bung at the top, under which was a piece of coarse cloth. The bung-hole was sufficiently large to admit an ordinary mop; and once a year the tanks were scalded with boiling water, mopped out clean, and dried in the sun. The tanks themselves were kept in an underground, cool cellar.

So far from diluted waters suffering decompositson, one year's supply was made in advance, and not used until a twelvemonth old.

It was considered a misfortune when either aqua rosæ or aqua sambuci had to be sold unless they had been kept a considerable time in stock.

The secret, if any, in this arrangement, consisted in the waters not being hermetically sealed [was the absence of light influential in keeping the waters?—Ed. C. and D.] It is clear that, though effectually preserved from dust and external sources of impurity, they were not excluded from the action of the atmosphere.

Many experiments were undertaken with reference to this last point. When rose or elder flower water is first prepared, there is scarcely sufficient odorous principle developed to distinguish either from fresh aqua distillata. An experienced laboratory man would be under some difficulty to decide. The development of odor requires time, accompanied by favoring circumstances. Practical observation seems to show that among these circumstances are coolness, dampness and aeration. Certain is it, however, that when either new rose or elder flower waters are put into stoppered bottles, large or small, and so kept either in the hot pharmacy or in a damp cellar, they will be totally destitute of odorous principle, though remaining from one June to the other.

It was found that a dilute water, which had not been matured as already stated, and in which the aroma was faintly perceptible, rapidly decomposed when it had to contend with the ordinary influences of the dispensing counter.

Nor was it affected more or less rapidly whether in a corked or stoppered bottle.

Amongst artificial means of preservation, spirit was found the worst. Waters containing large quantities of essential oil, or made from it, are much improved in their keeping powers by the use of powdered starch in preference to magnesia. This is added to the *cold* water, and the product filtered.

No medicinal water is more liable to change, nor more unsightly when decomposed, than aqua pimentæ. The alteration is prevented by the use of the oil, white sugar, powdered starch, and aqua frigida.

WATER AND ITS INHABITANTS.—The quality of water in relation to its fauna and flora has been the subject of investigation by some of the French Academicians. In substance, the results seem to prove that water in which animals and plants of higher organization will thrive is fit to drink; and on the other hand, water in which only the infusoria and lower cryptogams will grow is unhealthy. If the water become stagnant and impure, aquatic plants of the higher order will languish and disappear, and the half-suffocated fish will rise near the surface and crowd together in parts where there may still be a little of the purer element trickling in, and if driven from these places they will soon die. *Physa fontinalis* will only live in very pure water; *valvata piscanalis* in clear water; *limnœa ovata* and *stagnalis* and *planorbis marginatus* in ordinary water; and finally *cyclas cornea* and *bythinia impura* in water of middling quality; but no mollusk will live in corrupt water. Plants also exercise a reactive influence on the quality of water. The most delicate appears to be the common water cress, the presence of which indicates excellent quality. Varonicas and the floating water weeds flourish only in water of good quality. The water plantain, mints, loosestrife, sedges, rushes, water lilies, and many others grow perfectly well in water of moderately good quality. Some of the sedges and arrowheads will thrive in water of very poor quality. The most hardy or least exacting in this respect is the common reed, or *phragmites communis*.

TRANSACTIONS OF PHARMACAL COLLEGES AND SOCIETIES.

CHICAGO COLLEGE OF PHARMACY.

At a meeting of the Board of Trustees of the Chicago College of Pharmacy, on Wednesday, August 17th, the following named were appointed Delegates to the meeting of the American Pharmaceutical Association at Boston, on September 7th. Albert E. Ebert, E. H. Sargent, Geo. Buck, C. Gilbert Wheeler and Joseph Willard; and the following named delegates to the Convention of Teaching Colleges at the same time and place: C. Gilbert Wheeler, A. E. Ebert and E. H. Sargent. On motion the delegations were authorized to fill vacancies.

J. J. SIDDALL, *Secretary.*

THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The twenty-third annual meeting of this national society, which convenes on the 7th inst., in the city of Boston, promises not only the usual interest, professionally speaking, but with it is coupled a social feature which, judging from the preparations made by the local committee, will surpass everything heretofore attempted by the profession, at previous gatherings. We copy the following from the *Laboratory* (Boston), which will explain the situation much better than what we can:

"It is expected that the coming meeting in Boston will be the largest ever held. Some fifty members, many of them accompanied by ladies, are expected from New York alone, and should the other cities turn out in the same proportion, we may have, perhaps, two hundred and fifty visiting members, besides a very general attendance of druggists and others from Boston and vicinity.

Several causes contribute to this result—among them the very general interest taken by the druggists of Boston in the affairs of the Association, and the fact that it is proposed at this meeting to make the preliminary arrangements for the great Centennial meeting which occurs next year at Philadelphia.

Already invitations had been forwarded to the leading pharmaceutical organizations of the world to send delegates on that occasion, and there is reason to believe that they will meet with a very general response. At that time, our Pharmacy will be scrutinized by many from foreign lands, and we trust that the opinions which our visitors may carry away with them will be such as will be a source of pride and satisfaction to the pharmacists of America.

The meeting in Boston, the present year, is therefore of unusual importance, and it is gratifying to notice that this is being appreciated.

To the President elected at Boston will belong the duty of issuing the call for the Centennial, and the still more important responsibility of presiding over the preliminary business of the meeting at Philadelphia, and extending to the delegates of the world the welcome and fraternal greetings of the pharmacists of America. He should therefore be a thorough parliamentarian and a scholar, capable of presiding with force and dignity; while at the same time he should possess all the elements of a representative American pharmacist, in the highest degree.

Let us hope that some one possessing all of these qualities will be the choice of the Association at the Boston meeting.

The arrangements for the meeting, and the entertainment of the visiting members, are progressing favorably.

The exhibition is exciting a greater interest than usual. Not only is the number of applicants for space greater than ever before, but the character and variety of the goods to be exhibited promise to exceed those shown on previous occasions.

The exhibition will be held in the upper portion of Odd Fellows' Hall. The exhibition hall is nearly 100 feet in length, by 50 in width. All of this space has been applied for, and allotted to a large number of exhibitors, representing the leading houses of the country, and including the large manufacturing chemists, wholesale druggists, perfumers, dealers in toilet articles, etc., etc. The display of crude drugs in original packages promises to be unusually large and fine. The business meetings of the Association will be held in an elegantly furnished lodge-room, capable of seating 350 persons.

We give the following order of arrangements, as far as completed:

TUESDAY, SEPT. 7TH.

3 P.M.—First Session—*Lower Hall, Odd Fellows' Building.* Reading of the President's Address. Report of Committee on Credentials. Election of New Members. Reports of the Executive Committee, Secretary and Treasurer.

8 P.M.—Social Levee at the *St. James Hotel, Franklin Square.*

WEDNESDAY, SEPT. 8TH.

9 A.M.—Second Session, *Lower Hall.* Report of Committee on Nominations. Election of Officers. Reports of Standing Committees. Reports of Special Committees. Examination of Specimens, *Upper Large Hall.*

1 P.M.—Dinner, *Banquet Hall.*

3 P.M.—Third Session, *Lower Hall.* Reading of replies to Queries and Scientific Discussions.

8 P.M.—Promenade Concert, *Arcans' Hall, Odd Fellows' Building.*

A carriage excursion to the various points of interest in and around Boston will be provided for the ladies. The party will leave the St. James Hotel about 9.30 A.M.

THURSDAY, SEPT. 9TH.

9 A.M.—Fourth Session, *Lower Hall.* Replies to Queries and Scientific Discussions.

1 P.M.—Lunch, *Banquet Hall.*

3 P.M.—Fifth Session, *Lower Hall.* Reports of Committees. Incidental Business. Volunteer Papers, etc.

7.30 P.M.—Conference of Teaching Colleges, *Banquet Hall.*

FRIDAY, SEPT. 10TH.

9 A.M.—Sixth Session, *Lower Hall.* Reports of Committees. Incidental Business. Adjournment.

On the afternoon and evening, it is proposed to have a steamboat excursion in Boston harbor.

The Local Secretary, Mr. S. A. D. Sheppard, has devoted much valuable time to the carrying out of the details connected with the meeting and the exhibition, and has made arrangements which we believe will be entirely satisfactory.

Mr. Sheppard has secured a reduction of the fare by the Fall River line, from $10 to $7 for the round trip between New York and Boston.

Members going by this line will have a delightful sail through Long Island Sound. Tickets may be obtained from L. M. Royce, at the office of McKesson & Robbins, 91 Fulton street, New York.

The headquarters of the Association will be at the St. James Hotel.

Goods intended for the exhibition should be forwarded early in September, to enable the Local Secretary to make all necessary arrangements prior to the opening of the meeting."

NEW YORK ALUMNI ASSOCIATION OF THE PHILADELPHIA COLLEGE OF PHARMACY.

A meeting of this Society was held Tuesday evening, August 3d.

Mr. Wilson opened the discussion by stating that when carbolic acid and collodion are mixed together, a jelly-like mass is formed. This change has also been noticed by others, and was attributed to the acid properties of the phenol, as all acids give a similar reaction, which is said to be due to mechanical action.

Mr. Wellcome called attention to the following prescription which he had been requested to dispense:

Take of	Oil of Gantheria..........................	Three drops.
	Magendies' Solution of Morphia......	One scruple.
	Lime water	Two fluid ozs.

Mix.

Upon adding the oil to the lime water, a dense white precipitate is produced. When heat is applied to the mixture, methyl-salicylate of calcium and methylic alcohol are formed.

Mr. Jungeman remarked that the morphia would be thrown out of solution.

Mr. Wood said he frequently saw morphia prescribed with lime water, and invariably placed a "shake" label upon the bottle, and which he considers a necessary precaution in this mixture.

Dr. Von Weber gave a very interesting report on the therapeutical effects of *jaborandi*. He considered it a valuable diaphoretic, etc, but thought it would not become a popular remedy unless its disagreeable properties as a sialogogue are overcome. He stated that experiments are under way having this feature in view.

Attention was called to reports which have appeared in several journals regarding the aphrodisical effects of *damiana*. This called forth the statement that this so-called new medicinal agent was first brought out by a Washington druggist, who supplies a so-called tincture of "damiana" to the trade, at the moderate sum of $4 per pint. Several physicians have described the preparation; but thus far, no authentic cases of its said wonderful medicinal properties have been reported.

Some effort has been made by members of the trade to obtain samples of the crude drug from the party who is said to have a "corner" on the supply, but have failed.

If it is as valuable a remedy as claimed, why is it not brought into the market in a legitimate way? Thus far, its manner of introduction has given it the semblance of a nostrum.

The next meeting will be held Tuesday evening, Sept. 7th, at which time Prof. J. Suckert, Ph. D., will deliver a lecture on the coal-tar colors.

HENRY S. WELLCOME, *Recording Secretary.*

DEUTSCHER APOTHEKER-VEIRINS.

The annual convention of the German pharmacists takes place this year in the city of Hamburg, Germany. The sessions are to extend from the 6th to the 10th of September. This will afford an opportunity to the national societies of this country and Germany to introduce a pleasant feature by interchanging fraternal greetings while in session.

THE NEW YORK COLLEGE OF PHARMACY

Has recently elected Professors C. R. Fresenius, of Wiesbaden; G. Dragendorff, of Dorpat; Fr. Mohr, of Bonn, and W. De F. Day, of New York, honorary members. The following delegates to the Sixth Conference of Schools of Pharmacy were appointed: Chas. Rice, Ewen McIntyre, and Prof. P. W. Bedford.

At the meeting of the Board of Trustees held July 1st, various donations were received, among which were a cabinet of minerals, presented by Miss A. Shedden, and a collection of Southern plants, presented by Mr. H. A. Cassabeer.

PHARMACY LAW IN NEW HAMPSHIRE.—The Governor of the State of New Hampshire has appointed the following gentlemen as the "Commission of Pharmacy and Practical Chemistry," under a recent pharmacy act of the legislature of that State: Elias S. Russell, of Nashua, for one year; Charles S. Eastman, of Concord, for two years, and Hon. Charles A. Tufts, of Dover, for three years.

CORRESPONDENCE.

CORRESPONDENT (GRAND HAVEN.)—The chemical composition of *crab orchard salt* is, according to the analysis of Dr. Robert Peters,

Sulphate of Magnesium	63·19
Sulphate of Sodium	4·20
Sulphate of Potassium	2·80
Sulphate of Lime	2·54
Chloride of Sodium	4·77
Carbonate of Lime, Magnesium, Iron and Silica	.89
Bromine, a trace	
Water	21·61

"FLY-CATCHER."—The composition of the sticking fly-paper you mention, we are not aware of. The following formula may produce a satisfactory article:

Take of rosin (common) two parts, castor oil one part, heat to boiling point, strain and spread thin, while still hot, with a brush on sized paper.

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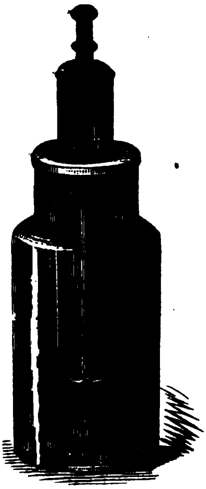
EMULSIFIER.

BY CHAS. F. HARTWIG.



This is the age vulgarly called "time is money," and much brain force is constantly expended to reduce the fleeting hours to a practical basis, for the sole purpose of gathering the "golden ducats."

Steam and electricity have been the great levers by which "old time" has been much ruffled in his slow gait, and there are now but few vocations of every-day life in which these motive powers have not been utilized, and by which the muscular force formerly expended has been reserved for more useful application in the arts and manufacture as well as in science. Pharmacy being both an art and a science, and one of the most foremost in working and pointing out methods and processes that are practical and valuable to the progress of the human race, has, however, for itself, done but little to facilitate and expedite the numerous manipulations and operations in constant use in extemporaneous pharmacy. When we take a retrospect, say of half a century or more, we find, with but little modification, the same "working tools" in use by the pharmacist of the present day as of that period. These consisting of apparatus, instruments and utensils, as, *e. g.*, the mortars and pestles, scales and balances, weights and measures, pill machines and tiles, funnels, etc.; and no doubt the same directions and rules as laid down by the early writers on pharmacy govern the uses of these pharmacal implements, and the same ancient precepts are taught and held fast, and are strictly observed, by the disciples of the profession of the present day, as they were in the days gone by. Some diversity of opinion occasionally springs up in the discussions and writings on the application of some principle of manipulation, pertaining to some extemporaneous or galenical preparation; and it is curious, as well as edifying, to see with what fervor each party advocates the advantages to be gained in following the particular directions and methods as laid down by them, when, in reality, both parties are correct, and each has solved the problem equally well; although they may have followed different processes, the same identical ultimate result has been obtained. It is well to remember that many rivulets may have but one basin of supply. To illustrate our subject, it is only necessary to cite the diversity of opinion existing regarding the moulding of suppositories and the preparation of a well-made emulsion. In the first preparation, the use of the mould and the fingers are brought forth in opposition to each other. In the second, the *shape* of the mortar is brought in controversy, one strongly advocating the broad and shallow shape, while the other party are equally persisting in proclaiming the advantages of the high, tapering, cone, "French" style. There is no doubt but both parties are successful in making an equally good emulsion in the very opposite character of the mortars used; as often so considered, marvelous things are accomplished by practice only, and the old saying that "practice makes the master" has undoubtedly something to do with the result. Professor Remington has, in his lectures, when speaking on the subject of making the *ointment of rose water*, called attention to the use of an egg beater, (a mechanical contrivance much in use in the culinary department of the good housewife,) stating that by its aid he had invariably produced a more elegant ointment than with the mortar and pestle. This led me to apply the same mechanism in the preparation of emulsions, and it gave in nearly all cases very satisfactory results. The only seemingly serious objection to its employment would arise when the quantity of the emulsion ordered fell below four fluid ounces; and as this is of more frequent occurrence, in the dispensing routine of the shop, than that of a larger quantity, it seemed necessary to me to look about for a contrivance which would overcome this objectionable feature.

After many trials and much consideration of the subject, I decided upon the use of the ordinary syringe, and found, after much experimentation, that it met all the requirements of a perfect emulsifier, without the risk of the chances of failure by separation or the lameness of the arm usually produced by the use of the mortar and pestle in the forming of an emulsion; the only muscular exertion required being the placing of the mucilage, oil and water into a receptacle, placing into this mixture the syringe, and moving the plunger of the syringe up and down a number of times, when the emulsion will have been formed equally well whether the operation has been performed by an expert or novice, and the big "bugbear" regarding the formation is entirely removed by this simple instrument, which is to be found in every apothecary shop. The style and size that I have found to answer the purpose best has been a one-ounce glass vaginal syringe, which, were it not for its convex point, would be perfection in itself; but this shape is liable of being broken against the bottom of the container, and it can be modified should a demand for this instrument arise; manufacturers of syringes could easily be induced to make for this special purpose an instrument having a flat bottom with the perforations similar to those of a vaginal syringe. The only useful additions that can be suggested are, that cork or rubber be substituted for the usual cotton candle-wicking employed to form the suction valve, that an extra heavy rim of glass be placed just below the perforated diaphragm, which would form a kind of base of rest and at the same time be somewhat of a protection to the diaphragm against breakage. The accompanying cut will illustrate my idea of the instrument.

My procedure for using the apparatus has been the following: I first weigh or measure into the bottle or graduate, in which I propose to make the emulsion, the mucilage and equal parts of water, mix them together by raising and lowering the plunger several times; then add the requisite quantity of the oil to be emulsified, and work the piston the necessary length of time, until a homogeneous mixture has been formed; then add the remainder, or the whole quantity of the menstruum; mix again by the use of the instrument and the emulsion is finished. In this manner I have made good emulsions of almond, olive, castor, turpentine and cod liver oils, also of the balsams of copaiva and fir; and this principle can be applied where an intimate mixture of fluid bodies is desirable. The instrument is easily cleaned by water, which washes and removes a good emulsified body from any vessel; and where odor is very persisting in adhering to the instrument, from the low price in cost, one could be designated and kept for each odorous body.

NOTES AND QUERIES.

BY L. C. HOGAN.

"℞. *Emulsionis Olei Terebinthinæ f℥ij.*—Sig: Tea-spoonful to be given every two hours." On reading lately such a medical ordination, the query has suggested itself to me, What is wanted? No authoritative formula is to be found in any of the pharmacal text-books, or in any of the pharmacopœias of Europe and America. It is true that the *Pharmacopœia Germanica* gives the following general directions for the preparation of emulsions: "Oil emulsions are made, when not expressly otherwise directed, by using of ANY desired oil *two parts*, gum arabic *one part*, distilled water *seventeen parts*." On inquiring among some of my fellow colleagues in regard to this preparation, I have found a variety of formulas, and as much difference in the component parts of the mixture. Some use one part of turpentine, some two parts; others, again, make an addition of castor oil, while, again, others take the liberty of adding tincture of opium. Would not this be a proper subject for investigation for the committee on unofficinal formulas, of the American Pharmaceutical Association?

Ointment of Iodide of Potassium.—This ointment, as prepared by the formula of the U. S. Pharmacopœia, is very unstable, which is somewhat due to the rancidity acquired by the lard on exposure to atmospheric influences, and thereby liberating free iodine. *Query:* How can lard be obtained in its greatest purity, and be retained from undergoing the changes to which ordinary lard is subjected? Can not some other medium than that of lard be suggested, which may not have this objectionable feature, for the preparation of this so frequently used and valuable ointment? The German Pharmacopœia directs the addition of one part of hyposulphite of sodium to one hundred parts of the ointment, which prevents the discoloration of the to be white ointment. This is prudent, and saves much explanation to the patient concerning the change which takes place in the preparation if not so protected. Has the preservative properties of benzoin or its acid, or that of salicylic acid been tried? How about the much used and much abused cosmoline? Let us hear from some of our colleagues on this subject.

Syrup of Ipecacuanha.—This syrup when made according to the formula of the United States Pharmacopœia, in adding the fluid extract of ipecacuanha to the simple syrup, invariably produces a turbid preparation, due to the precipitation of a resinous substance, held in solution in the fluid extract. As the activity of ipecacuanha, or rather its medical properties, are said to be due to the agent *emetia*, which is soluble in water, I have taken advantage of this feature by first mixing the fluid extract with water and filtering, and dissolving in the clear solution the requisite amount of sugar to form a syrup. The following is the formula:

Take of Fluid Extract of Ipecacuanha, . .	1 fluid ounce.
Water, ...	7 fluid ounces.
Sugar, ...	12 troy ounces.
Syrup, ...	sufficient quantity.

Add the fluid extract to the water with stirring, let stand two or three hours, filter through paper, add to the clear filtrate the sugar, and dissolve by aid of gentle heat; strain, and when cold add syrup to make the measure sixteen fluid ounces.

Solution of Citrate of Magnesium.—Much has been said and written on this seemingly simple compound of magnesia and citric acid; but with all that, the question is frequently asked among the craft, "How do you make solution of citrate of magnesium?" This would indicate that there still exists some doubt as to the practical working and perfection of the officinal formula. It again goes to demonstrate that it requires more brain than the simple purchase of crude drugs and chemicals by their respective technical terms, mix them together according to laid down processes, and obtain definite and satisfactory results. This applies to this simple solution of citrate of magnesium. The formula of the United States Pharmacopœia, if strictly followed, with *pure* materials, will produce a satisfactory product in all respects, and which will not undergo decomposition for the length of time to which such watery solutions of citric or tartaric acid are to be subjected.

I therefore, to a great extent, charge the instability of this officinal solution to the impurity of the commercial carbonate of magnesium, as obtained in the market. Of all the specimens of English carbonate of magnesium examined, I have found but one which is free from aluminium calcium and iron, and this one only commercially pure, while all the others are largely contaminated with impurities. To make my remarks on this subject somewhat practical, I hope, Mr. Editor, you will allow me to mention the name of the firm who manufacture the magnesia of such purity as has given at my hand so satisfactory results—"Watson, Kipling & Co., Seaham Chemical Works, England." In addition to the officinal directions for making this solution, I do fully indorse the suggestions offered by Mr. Wehrli in the *Pharmacist* (January, 1875, page 3) on this preparation, and if so made, will produce, at all times, a satisfactory and pleasant medicament to the prescriber, dispenser and consumer.

ACCIDENTAL POISONING.

BY J. B. MOORE.

Since the accident at Belleville, N. J., resulting in the death of a thoughtless druggist, who was poisoned by taking a drink of the tincture of aconite root by mistake, and the death of Mrs. Dorscheimer, of this city, who took by mistake a swallow of carbolic acid for a dose of harmless medicine precribed for her by her physician, many suggestions have been offered by pharmacists to prevent accidental poisoning. These are principally the stale and hackneyed ideas that have been urged from time to time before. Pharmacists generally seem to take a wrong view of the subject, at least so far as the means of preventing these unfortunate occurrences are concerned.

Nearly twenty-eight years of practical experience in pharmacy, and close observation and attention to the subject of accidental poisoning, has convinced me that carelessness and thoughtlessness are the chief, and in fact almost the exclusive causes of accidents, not only in dispensing medicines by pharmacists, but in the use and keeping of poisonous substances by the public. If instead of relying to much on poison closets, bottles of peculiar shape and color, or the many other devices and expedients that have been suggested in the pharmaceutical journals and the public press, pharmacists would only learn to be more careful in every thing they do, and teach their apprentices and assistants to be the same, they would be more likely to cure the evil and remove the danger.

But until this is done, we will continue in the future, as in the past, to occasionally hear of cases of accidental poisoning by druggists' mistakes, and until people learn to be careful in the keeping and use of patent and poisonous medicines, the press will still have to report accidents similar to those recently brought to the attention of the public.

Cases like that of Mrs. Dorscheimer are of more frequent occurrence than the public have any idea. The great majority of these cases of accidental poisoning, by the use of the wrong medicine through carelessness, only come to the notice of physicians and pharmacists, as the accidents are often not of a serious nature, or the victim of carelessness secures relief by the timely aid of antidotes, and the circumstances are never made public.

But, unfortunately for poor Mrs. Dorscheimer, the poison ingested by her was carbolic acid, a substance for which there is no known reliable antidote, and the terribly corrosive and irritant properties of which are such as to at once, especially when swallowed in such large doses, produce serious if not fatal lesion of the mucous membrane of the mouth, throat and stomach, which would require the greatest promptitude in the administration of remedies to relieve.

All fatal cases of accidental poisoning very naturally create excitement and alarm in the community, no matter how occasioned. If, however, the accident has been the result of the victim's own carelessness the circumstance is soon forgotten, but when an unfortunate pharmacist happens to make a mistake which results in the death of a fellow being, he is at once pounced upon by the press and the public, while physicians are not unfrequently found to join in the onslaught, and he is relentlessly persecuted from all quarters.

People should in such cases not be too censorious and uncharitable, but should make some allowance for the falibility of human nature, even under the most favorable circumstances. We are all liable at some unlucky moment to err. Physicians particularly should be very charitable, for the public little know of the numerous mistakes made by them in writing prescriptions.

But these little frailties of our medical friends are never brought to light, as their mistakes are corrected by pharmacists in silence. But not so with the latter; he has no sentinel on the lookout to detect and correct his errors, and they do their deadly work, and publicity is given to every detail. When, however, we consider the number of prescriptions that are compounded and the amount of medicine sold, the number of persons engaged in the work, and the difficulties under which they labor, it would appear almost a miracle that many more mistakes do not occur.

If the public only knew how badly and how carelessly prescriptions are sometimes written by some medical men, the incorrect abbreviations, the obsolete and improper names of medicines often employed, and the mutilated pieces of paper upon which prescriptions are sometimes written—two or more prescriptions being not infrequently written upon the fly-leaf of a book which is not large enough for one—they could then in a measure appreciate the difficulties under which the pharmacist often labors. The names of the medicines and the directions are often so jumbled up together and in such a state of chaos, and the chirography often so bad as to require a longer time for the pharmacist to decipher the prescription than it would to compound it.

It must not be supposed, however, that these remarks are applicable to all or even the majority of physicians, many of whom write their prescriptions clearly, upon good paper or prescription blanks provided for the purpose, but only to a few members of the profession. I have often wondered myself, knowing and appreciating the dangers which beset the pharmacist, that the business can possibly be conducted with such comparative immunity from serious mistakes. The record of pharmacy in this respect is such that its votaries may well feel proud. It certainly proves them to be, as a class, among the most careful people engaged in any business or profession.

There are, I am aware, careless and indifferent men in both medicine and pharmacy, and it is this class in both professions that make the greatest number of serious mistakes, and it is these that will continue to be most liable to err despite all laws and all safeguards.

Precautions and safeguards are all good in their way, and it is well that every thing of this kind that offers any hope of security against mistakes in compounding or dispensing medicines should be adopted, but these will never cure the evil. And, in regard to legislation, I would say that when legislators can enact laws to make careless people careful, it will be well for us to invoke their aid. But, until then, it behooves us, who are dealing in and daily dispensing potent and death-dealing substances, to as far as possible remedy the matter in the only really feasible way, and that is to learn to be careful ourselves and to take pains to educate our apprentices and confirm our assistants from the day they enter our stores in carefulness and thoughfulness.

A young man, from the day he enters upon his apprenticeship in pharmacy, needs constant looking after, and should be carefully instructed in every detail, from the washing of a bottle to the most important operation, and should be cautioned and taught to be careful, thoughtful and attentive in every thing. It is only this constant watchfulness on the part of the preceptor, and careful training, that makes the reliable, intelligent and skillful pharmacist, upon whom the public can rely for safety in dispensing.

If young men are permitted to do as they like, vegetate as it were, pick up what knowledge they can by the wayside, as is too often the case, instead of being watched closely and instructed in every thing they do, and habits of attention inculcated from day to day, they will soon fall into listless, careless and negligent habits, which will adhere to them for life.

Constant looking after and stirring up, if the expression may be permitted, wakens them, brightens their ideas, and quickens their perceptions, and causes them to think what they are about, and to rivet their attention upon the business in hand, and they will thus day by day acquire carefulness, which becomes a habit, a part of their nature, which fortifies them against the liability to mistakes.

It is to this more than to all other means that pharmacists must look for careful assistants, and the public for the nearest approach to perfect security against druggists' mistakes.

But, after all, it must be borne in mind that infalibility is not an attribute of human nature.

The great majority of the cases of accidental poisoning that occur by druggists' mistakes are not the result of ignorance alone, as generally supposed, but are the result of carelessness or thoughtlessness.

Notwithstanding the paramount importance of a thorough theoretical and scientific training, which is now so adequately provided by our colleges of pharmacy—institutions which have done so much to elevate and improve the standard of pharmacy—yet a man may graduate at all the colleges of pharmacy in Christendom, and may have all the knowledge that can be acquired by years of the closest and most assiduous application to study, but if he has not in his apprenticeship been subjected to that rigid discipline and thorough practical training in habits of carefulness, he will still be wanting.

In conclusion, I would say that the use of bottles of a peculiar shape and color, for all medicines dispensed by pharmacists of a poisonous nature, is a safeguard of very doubtful value.

This would only add another complication to the already complicated business of the pharmacist, without, in my opinion, serving in the slightest degree as a safeguard against accidents. In the first place, nine-tenths of the people would not understand the import of the odd-shaped and peculiar colored bottle. It would take a long while to educate the public to its significance, and after all this how soon would they forget or learn to disregard it. Familarity would soon breed contempt for and indifference to its warning.

The poison bottle would soon become as familiar and as little dreaded as fire-arms and sharp-edged tools, with which careless people so often injure and sometimes kill themselves. Such devices must ever prove barren of any thing like useful results, either when employed to prevent accidents in the use of medicines by the public or mistakes by druggists' in dispensing. Eternal vigilance in all such matters is the only price of safety.

So long as harmless medicines are kept in the same place in the sick chamber, with those that are poisonous, and remedies for external with those for internal use, and so long as the people will take and administer medicines from bottles, without first examining and reading the label, cases of accidental poisoning are liable to occasionally occur.

No poison bottle will ever prevent these sad occurences, even though it is made in the most peculiar and caution awakening form. The neglect to carefully read the directions on the bottle each time the medicine is taken or administered is one of the most prolific causes of mistakes.

PHILADELPHIA, Sept., 1875.

ALL ABOUT SPICES.

BY H. F. A. PINCKNEY.

It is surprising how little heed is given to the merits of many of the common articles of food of the civilized world, but especially is this the case in our own country. This heedlessness is not confined to the consumer, but is shared in, to nearly an equal extent, by many of the dealers themselves. This is caused in a great measure by the apathy of the people, a willingness to remain content with what they have until something of a superior nature is forced, as it were, upon their attention, when for the first time they will begin to inquire or rather study into its qualities, and then wonder why they never knew all this before and how they ever put up with the former trash so long. If the people would only arouse themselves sufficiently to look into the matter and demand what their money calls for, many of the poor adulterated and nearly worthless goods (for which they are paying a price high enough to secure a genuine article) would be either driven from the market or made to tumble to a price commensurate with their true value. To no article so generally used are these remarks more applicable than to spices.

Spices of nearly all kinds are of such a peculiar nature that they will admit of more adulterations, when ground, than most other goods, and with the least chance of detection; hence the fact that scarcely any of the ground spices sold in this country are really pure. This is no secret amongst the dealers, and even the consumers are aware of it; indeed there are houses in most large cities that deal exclusively in "spice mixtures," or articles manufactured to adulterate spices. In many instances "ground pepper" consists of one part pepper to four or five parts of some cheap substance. Cloves, cassia, cinnamon, ginger, pimento, nutmegs, etc. are treated more or less the same way. So long as the ground pepper is hot (if enough is used) it is argued that one should be satisfied. But give the subject a moment's thought and you will be at a loss to know of what benefit is all the substituted stuff that comes with it. If 4-5 of the so-called pepper is pea dust, or whatever it is, and it is a necessary ingredient, why don't you buy it for pea dust and pay pea dust price, for it comes a deal cheaper; if the latter is not necessary for your seasoning, why not buy the pepper alone (1-5 of the quantity) and pay pepper prices? Would it not be more satisfactory and far less expensive? So with all spices. If people were to purchase them crude in this country as they do more generally in England, they would have an opportunity of getting what they called for, although in the latter country the Government will permit of no adulteration whatever, unless the ingredients used in its manufacture are specified on the outside of the wrapper. Consequently, as a rule, English goods can be relied upon for quality, purity, uniformity and full weight. Into England, too, is imported a much wider range and finer quality of spices than are used in America; though more recently a much finer and more cultivated class of spices have been introduced here, and, no doubt, are destined to come as they get known, into general use; for although they are a trifle more expensive, they are of such high flavor and contain so much more essential to their quality, that they are really far preferable to and much cheaper than the ordinary kind. We can not too forcibly urge upon the people of this country to look into this matter of what they are eating, and through no channel can it be easier to call the attention of the consumers to this important particular than through the retail dealers, for they are the ones who directly supply the people. If they furnish fine and genuine goods to their customers, the latter get what their money entitles them to, and then they can not fail to appreciate them. Indeed, in no case has any dealer failed to improve his trade where he has given his customers a good, genuine article at a fair price, and when the customer once uses such he will be satisfied with no other. Firmly believing in the efficacy of this theory, and feeling convinced that the apathy, both on the part of the dealers and also the consumers, is due almost wholly to the want of the better knowledge of the nature and intrinsic merrits of these indispensable articles, I propose to use my humble efforts in a series of articles on spices; treating on each spice seperately, and giving what general information I have acquired from an extensive travel and experience devoted entirely to the trade; giving in detail the various qualities and grades, and how distinguished, the mode of cultivation, the curing and purchasing for export, style of packages, trade usages, allowances, terms, etc., and their various handling down to the consumers; and should a more familiar and better acquintance with an article of diet so much used increase the demand for finer, purer and altogether better grade of spices, my object will be attained.

Chicago Drug Clerks' Association.—It is proposed to organize a Drug Clerks' Association in this city, having in view the mutual improvement of the clerks. The meeting has been called for Oct. 6th, at the rooms of the College of Pharmacy. The movement has our cordial sympathy and good wishes.

THE PREPARATION OF FERRIC CHLORIDE.

BY JAMES F. BABCOCK.

The conversion of ferrous salts into ferric salts has always been a stumbling-block to both students and many practical pharmacists.

The student is troubled by the theory of the changes which take place; at first sight the complicated reaction; the rationale of the process, which is frequently very imperfectly explained, either by his text-book or his teacher; and the pharmacist failing to fully comprehend the nature and objects of the various steps involved, but too often produces a preparation widely different from that which the Pharmacopæia directs.

Much has been published on the subject by able writers, among them Procter, Squibbs and others, so that we can not hope to present any thing new. But it has always seemed to us that the matter has been made to appear unnecessarily difficult, and the object of the present article is simply to make the subject a little plainer to many, whom, we have no doubt, will be glad to have a clearer idea of the process for this important preparation.

In the case of ferric chloride, the first step, the formation of a ferrous salt by a solution of metallic iron in the proper acid, is simple enough, and occasions no difficulty, if pure iron is used.

The liquid, after the evolution of the hydrogen has ceased, is boiled, to expel sulphuretted hydrogen or other gases which may have been produced during the reaction, and filtered.

It is a solution of ferrous chloride. The next step is to convert it into ferric chloride. It is here that the difficulty begins. Let us have a clear idea of what we are to do. We are to convert

$Fe\,Cl_2$ into $Fe_2\,Cl_6$.

For theoretical reasons we are obliged to write the formula of ferric chloride $Fe_2\,Cl_6$—but it will be sufficiently correct for the purposes of our explanation to consider it as $Fe\,Cl_3$—which gives the elements in precisely the same proportions as the other (theoretically) correct formula.

We have then to convert

$Fe\,Cl_2$ into $Fe\,Cl_3$.

The *simplest* way of accomplishing this is, of course, to conduct chlorine gas into the solution as in the process of the French *Codex*. The solution need not for this purpose be hot, for the reaction takes place quite as well in the cold.

Thus:—$Fe\,Cl_2 + Cl = Fe\,Cl_3$.

Any excess of chlorine which dissolves in the liquid is readily driven out by boiling.

Now, if the preparation of chlorine gas, which of course requires a *separate* apparatus, were not troublesome, this method would no doubt be the *best* way of producing ferric chloride, but to avoid the trouble of making this gas, and then passing it into the solution of ferrous chloride, a method is adopted which consists in adding a mixture of acids, which

at a boiling temperature, and in presence of a ferrous salt, produces chlorine in the *same* vessel as that which contains the salt to be acted upon.

The acids used are muriatic acid and nitric acid. When a mixture of these acids is heated, chlorine, water, and a compound known as chloro-nitric gas is produced thus:

$6\,HCl+2\,HNO_3=2\,NOCl_2+4\,H_2O+Cl_2.$

Chloro-nitric gas, when heated with ferrous salts, is decomposed and separates into nitric-oxide and chlorine.

$NOCl_2=NO+Cl_2.$

The reaction between these acids is then, practically—$6\,HCl+2\,HNO_3=Cl_6+4\,H_2O+2\,NO.$

When this mixture of acids is heated, in contact with ferrous chloride, the same reaction takes place, the chlorine combines with the ferrous chloride, producing ferric-chloride, the water remains in the vessel, and the nitric oxide passes off as a colorless gas, which, coming in contact with the oxygen of the air, is converted into the reddish fumes of peroxide of nitrogen ($NO+O=NO_2$).

The complete change is readily shown by the following diagram, which represents the reaction as usually written:

$6\,FeCl_2+6\,HCl+2\,HNO_3=3\,Fe_2Cl_6+4\,H_2O+2\,NO.$

BEFORE THE REACTION.

Ferrous Chloride.		Muriatic Acid.		Nitric Acid.		
Fe	Cl_2	Cl	H	O		
Fe	Cl_2	Cl	H	H	N	O
Fe	Cl_2	Cl	H	O		
Fe	Cl_2	Cl	H	O		
Fe	Cl_2	Cl	H	H	N	O
Fe	Cl_2	Cl	H	O		

AFTER THE REACTION.

Ferric Chloride.				Water.		Nitric Oxide.	
Fe	Cl_2	+	Cl	H	O		
Fe	Cl_2	+	Cl	H	H	N	O
Fe	Cl_2	+	Cl	H	O		
Fe	Cl_2	+	Cl	H	O		
Fe	Cl_2	+	Cl	H	H	N	O
Fe	Cl_2	+	Cl	H	O		

This change is frequently explained as one of oxidation of the iron, but oxidation has nothing to do with it, for the *iron* is not oxidized, as is seen by an inspection of the reaction.

A part of the oxygen of the nitric acid combines with the hydrogen of the muriatic acid to produce water, and thus liberate chlorine, precisely as the oxygen of oxide of manganese combines with the hydrogen of muriatic acid in the usual method of production of this gas.

The chlorine thus produced unites directly with the ferrous chloride to form ferric chloride, precisely as in the case where chlorine made in a separate flask is passed into the solution of iron salt.

The actual operation of this method is, however, complicated by several other changes; a reaction between the first portion of nitric oxide produced, and that portion of the ferrous salt which has not up to that time been acted upon, frequently causes trouble.

Ferrous salts in solution absorb nitric oxide, forming a deep brown compound of a composition represented by the formula $2\ (Fe\,Cl_2\,N\,O)$, so that for a time there is little or no evolution of gas, because that which is produced is absorbed by the unchanged ferrous salt; at length, however, the latter becomes saturated, and as the change of the iron salt approaches completion, the absorbed gas is rapidly evolved, sometimes causing the frothing over of the contents of the dish, unless it is capable of holding at least three times the amount of the solution. Another difficulty lies in the fact that during the action of the acids, a portion of them volatilize and escape decomposition. The amount of acids to be added will vary slightly, according to the manner in which the experiment is conducted.

It is also desirable that there should be no excess of nitric acid remaining in the finished preparation, while a slight excess of muriatic acid has no special objection, but may be of benefit to prevent a decomposition of the ferric salt when diluted for various uses, as the making of tincture of chloride of iron, etc.

The method which is adopted for the preparation of ferric salts has these facts in view.

We do not, therefore, add to the iron solution the whole of the mixed acids at once, but only the muriatic acid (the latter being in slight excess to allow for volatilization) with a portion of the nitric acid required.

The solution should then be *heated to the boiling point, and kept boiling* during the subsequent addition of nitric acid. The latter is gradually added, *allowing a few moments' boiling after each addition*, although the red fumes may have apparently ceased, until all effervescence ceases on the further addition of nitric acid, and the liquid loses its dull or dark shade and becomes *clear* and *brilliant.*

This change of color often takes place suddenly, with a great evolution of gas, and marks the termination of the process, but before we decide that it is complete, *a drop of the solution taken out of the vessel should be tested.* The drop diluted with a little water is mixed with a drop of solution of ferrid-cyanide of potassium (red prussiate) *not ferro*-cyanide, as stated in the Pharmacopæia. The solution should, upon the application of this test, give only a brown color with no precipitation. Should a blue precipitate occur, more nitric acid must be added to the iron solution until the above test is satisfactory.

The danger of the frothing over is materially lessened by following the suggestion of Heydenreich, *i. e.*, to pour the nitric acid along the side of the dish instead of directly into the center.—*The Laboratory.*

SCAMMONIUM.†

BY A. HESS.

Scammonin, the active medicinal principle of scammonium, is a glucoside, possibly also called jalapin, convolvulin, and orizabin. In the pure state it is a dry, colorless, and tasteless substance, having a peculiar faint sweetish smell. It is completely soluble in alcohol and ether, forms a turbid solution with chloroform, and is only slightly soluble in oil of turpentine and glycerin. It corresponds to the empirical formula, $C_{68}H_{56}O_{32}$ or $C_{34}H_{56}O_{16}$. When treated with alkalies it is converted into scammonic acid; treated with boiling dilute sulphuric acid it is converted into scammoniol. The latter digested with alkalies is changed into scammoniolic acid, which, as well as scammoniol, yields ipomæic acid by the action of hydrochloric acid.

Scammony is derived from the *Convolvulus Scammonia,* L., a plant growing principally in Syria, especially near Aleppo, but found also in the southern Balkan peninsula, the Crimea, the Caucasus, etc., which is brought into commerce entire or only in pieces of the roots about thirty centimetres long. Formerly, varieties of scammony from other species of the same family came into the market from France, Spain, and Egypt, but these are now entirely supplanted.

Besides cellulose, the roots contain a large quantity of oxalate of lime, scammonin, extractive matter, sugar, starch, tannic acid (colored violet by iron), vegetable mucous, and small traces of wax. Three different specimens were examined by the author. No. 1 was a poor root, grayish white at the section, with indistinctly seen woody fibres; No. 2 a very fine root, 10 centimetres thick, and brown at the section; No. 3 was a medium root, 8 centimeteres thick, brownish at the section, with indistinctly seen, irregularly distributed, woody bundles. He found:

		Of this was in Alcohol.	
	Soluble in Water per cent.	Soluble per cent.	Insoluble per cent.
I.	20·0	10·7	9·3
II.	27·4	12·3	15·1
III.	18·2	9·3	8·9

		Of this in Water.	
	Soluble in Alcohol per cent.	Soluble per cent.	Insoluble per cent.
I.	17·7	13·2	4·5
II.	23·0	15·7	7·3
III.	21·4	12·1	9·3

The aqueous extract as a thick fluid was dark brown, becoming brownish black when dry, and having a sweetish taste that afterwards became astringent and faintly acid. In doses of 1·5 grams, taken three times at intervals of one hour, it had no purgative action and only gave rise to pains in the stomach and an accumulation of gas in the lower bowel. The extract obtained from the root by alcohol was evaporated and well washed with water. A residue was left consisting of a mixture of scammonin, tannic acid, and coloring matter, from which the pure scammonin could be obtained by treatment with animal charcoal. In this manner No. I. yielded 3·4 per cent. of nearly pure scammonin, No. II. yielded 5·11 per cent., and No. III. yielded 6·6 per cent.

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† Abstract from a Prize Essay, published in the *Archiv der Pharmacie,* vol. iii., p. 223.

Scammonium is obtained in Turkey by making an incision in the crown of the root, and collecting the exuding juice. This is the first very pure product, free from tannic acid, but unfortunately it is often adulterated with flour. By boiling the incised roots, two other quantities are obtained, which contain a mixture of mucous and tannic acid, but only very little scammonin, and therefore are often mixed with a decoction of species of euphorbia. Three kinds of Aleppo scammony obtained from different houses presented a great similarity in their external characters. Treated with hydrochloric acid, two of them swelled up, the third did not. After extraction by means of alcohol, there remained from all three kinds a more or less dirty white residue, which was colored by solution of iodine. Boiled with water the residues of the first two completely gelatinized, that of the third became flocculent, and upon filtration left an impure, transparent paste upon the filter. These residues, upon incineration, yielded 4, 4·5, and 2 per cent. of ash, consisting principally of carbonate of lime, ferrous oxide, and difficultly combustible carbonaceous particles. To alcohol these three specimens of scammony gave up, respectively, 45, 34·3, and 53 per cent. All the remainder consisted consequently of impurities. These alcoholic extracts of scammony proved to be free from tannic acid, whilst in the alcoholic extract of the root much tannic acid was found.

To free the scammony from this tannic acid and the mucous substances is the object of the Pharmacopœia directions, and the author considers that a comparatively efficient purification may be effected by simple solution in spirit, pure scammony being soluble in two parts of spirit, whilst the other substances are mostly difficultly soluble.

The author then gives a description of five kinds of scammony supplied as official from different countries:

No. 1. Resin. Scammon. fusc. of the Pharmacopœia Germanica, from Dresden.—This specimen was in dark brown, dry sticks, presenting a shining, resinous fracture, sp. gr. 1·142. Upon trituration it yielded a loose, pea-green powder, which under the microscope appeared as shining coppery red or emerald green transparent glass-like particles. Dried over sulphuric acid it lost 2·2 per cent. The original scammony began to soften at 30° C.; this dried substance melted at 200° C. to a fluid mass, which again became solid at 80° C. This scammony, powdered and moistened with a little water, adhered together and could be worked up in a uniform mass. Mixed with equal parts of gum arabic and water it formed an emulsion, which a further addition of water destroyed. It also remained tolerably well suspended in cow's milk, without altering the color of the latter. It dissolved in nine parts of cold alcohol, imparting a brownish color and a weak acid reaction; this solution, upon the addition of perchloride of iron, acquired a brown violet color, and after longer standing, deposited a slight flocculent precipitate. In potash solution it dissolved in almost every proportion, with a darker color; with concentrated sulphuric acid it formed a solution at first brownish, then ruby red, and finally of a dark red-brown color. An alcoholic solution precipitated with basic lead acetate, gave 8·7 per cent. of tannic acid, calculated as quercetannin.

No. 2. Resin. Scammon. alb., from Dresden, prepared from the preceding by means of bone black.—This specimen was in white, opaque, very dry sticks, hard as lac, and having the characteristic smell of scammony; its sp. gr. was between 1·107 and 1·112. In thin layers this scammony was colorless and transparent; in thicker layers it was quite amber colored. It grated between the teeth, but afterwards became soft, and dissolved in the mouth, communicating a slight tingling sensation to the palate. It was difficult to powder, but after drying, by which it lost 4·5 per cent., this became more easy. Under the microscope the undried preparation appeared as conchoidal and splintered fragments, whilst the anhydrous preparation, under the highest powers of the microscope, appeared only as an amorphous powder. The melting point of the undried preparation was 30° C., the same as that of No. 1; the dried preparation melted at 120° C. It was easily suspended as a fine powder in cow's milk, the taste of which at first was scarcely altered, but afterwards it left a peculiar irritation in the throat. With gum arabic it formed a dirty white emulsion. It was freely soluble in alcohol, ether, and caustic potash; less soluble in glycerine and oil of turpentine. The concentrated alcoholic solution (1 to 4) was colorless, but was colored yellow brown by perchloride of iron; no precipitate was formed even after standing. Concentrated sulphuric acid at first colored the powder madeira brown; then after complete solution the color became ruby red, and finally passed from a dark brown to a brownish black. The freshly fractured surface moistened with the alcoholic solution underwent no change of color. Neutral as well as basic lead acetate produced, after standing some time, only a flocculent precipitate, which gave a yellow-brown powder when dried, that corresponded to 0·8 per cent. of mucus. This was the only impurity in this scammony.

No. 3. Resin. Scammon., Pharm. Germ., from Hamburg.—This sample was in reddish brown, translucent sticks, 1·2 to 1·8 centimetres thick, weighing 20 grams, and covered with a greenish gray dust. The resin had a peculiar smell, not unlike that of jalap resin. When chewed, it at first crunched between the teeth, then became soft, and had a slight sweetish taste. When moistened with water, it could be kneaded, its sp. gr. varying from 1·104 to 1·110. It gave a yellowish-gray powder, which lost 4 per cent. by drying. Under the microscope it appeared as amber or emerald-green splinters, and when warmed behaved like the other kinds. Dissolved in five parts of alcohol, the clear, brownish green solution became colored brown by dilute perchloride of iron, and brownish violet by the officinal solution. Water produced a greenish turbidity, and caustic potash a brown deposit. Basic acetate of lead produced a precipitate representing about 3 per cent. of mucous, with very little tannic acid. Strong nitric acid colored the powder at first greenish, then dark brown, and ultimately dissolved it in part with separation of a reddish, fatty substance and evolution of nitrous vapor. On neutralizing with ammonia, the glucoside was again deposited. Strong sulphuric acid colored the powder ruby or dark red.

No. 4. Resin. Scammon., Pharm. Holland., from Rotterdam.—This sample was in greenish twisted rods, 6 centimetres thick, the conchoidal fracture was blackish brown, resinous, presenting minute pores, and thin splinters of the resin were translucent at the edges. It had the peculiar smell and taste of the previous kind. The powder was yellowish brown, of sp. gr. 1·12, and lost 5·4 per cent. over sulphuric acid. Under the microscope, it appeared to contain white as well as red and emerald green fragments. It softened at between 60° and 70° degrees C., and melted at 120° C., to a thick liquid, which became thin at 210° C. When heated at a higher temperature, it gave off a pleasant smelling, inflammable vapor, and began to carbonize at 250° C. The charred residue was brilliantly black, porous, difficultly combustible, and gave 0.2 per cent. of ash. The resin dissolved in 12 parts of alcohol; the brown solution was colored brownish violet by dilute perchloride of iron, and blackish violet by the officinal. Diluted with four times its volume of water, the solution presented a green turbidity. Basic acetate of lead produced a precipitate representing 8·8 per cent. of mucous substances and tannic acid.

No. 5. Resin. Scammon., Pharm. Suecic., from Hanover.—This sample was in irregular, brittle fragments, resembling pieces of bark, from two to seven millimetres thick, with a treacly smell; it crunched between the teeth, then became soft, and produced slight irritation of the throat. It gave a greenish white powder that agglutinated with water, and could then be kneaded between the fingers. With gum acacia it formed a grayish white emulsion, and it could be suspended in milk or oily emulsion. When melted it behaved like No. 2. Its sp. gr. was about 1·16. Over sulphuric acid it lost 4·3 of moisture. The resin was very soluble in ether, and in five parts of alcohol. The almost colorless solution became brown with perchloride of iron solution, and then gave a dark precipitate with caustic potash. Basic acetate of lead gave a whitish, curdy precipitate, representing about 4·2 per cent. of mucous substances.

The purest scammony was, therefore, that prepared with bone charcoal, it being quite free from tannic acid, and containing only 0·8 per cent. of mucous substances. The Swedish sample was also free from tannic acid, but the mucous substances in it amounted to 4·2 per cent. No. 3 contained only 3 per cent. of mucous substances, but traces of tannic acid. Nos. 1 and 4 contained rather much mucous substances together with sensible quantities of tannic acid. An important index of the purity of scammonin is its solubility in alcohol. It is evident that since the sample No. 2 dissolved in four, Nos. 3 and 5 in five, No. 1 in nine, and No. 4 in twelve parts of cold alcohol, by treating the several products with four times their weight of alcohol, it would be possible, especially by adopting purification with animal charcoal, to obtain good and, above all, uniform preparations.

Scammony acts upon the animal economy similarly to gamboge and jalap resins, between which it holds an intermediate place, since 0·06 gram of gamboge, 0·03 gram of scammony, and 0·05 gram of jalap resin have about the same action. A dose of 0·3 gram of the five kinds of resin above mentioned, scarcely differing in efficacy, produced in ten to fifteen minutes an evacuation of urine, and in three-quarters of an hour a loose evacuation of fæces, attended with slight pain in the stomach, followed after half an hour and an hour and a half by a second and third. Taken in three hourly doses of 0·05 gram, the same effects were produced after the third dose. One gram produced violent pain and a rapid succession of evacuations, leaving considerable inactivity of the lower intestine, lasting during several days. At the same time inflammation of the mucous membrane was produced, attended by loss of appetite and headache.

Scammony resin is preferable to jalap resin on account of its pleasant smell and taste, and because it does not cause so much griping. It is also much less likely to cause vomiting.—*London Pharmaceutical Journal.*

ACTION OF SULPHURIC ACID ON LEAD AND ITS ALLOYS.

Few metals are able to resist the action of hot oil of vitriol, lead being, of all the common metals, the least acted upon by the acid. The addition of some metals assists lead to withstand the attacks of sulphuric acid, while others render it a more easy victim. The careful experiments of A. Bauer, which were published recently in the *Berichte der Deutscher Chemischen Gesellschaft,* can not fail to be of practical value to manfacturers and others.

Several alloys were prepared by fusing pure lead with other metals, the exact composition being determined by analysis. These alloys were rolled out into plates of equal thickness, and heated in a suitable apparatus with sulphuric acid of 66° B., the temperature at which a reaction took place being carefully observed. The apparatus consisted of a flask secured in position a little above the bottom of an air bath, the sides of which were formed by a glass cylinder. A thermometer reaching down to the acid in the flask showed its temperature. In every experiment an equal weight of alloy and an equal volume of acid were employed. The results were as follows:

1. Pure lead: A strip of pure lead, weighing 3 grains, was heated in 3½cubic inches sulphuric acid of 66° B. At about 347° Fah., a considerable evolution of gas took place, which was stronger at 374° Fah. At 446° to 464° Fah., all the lead was at once converted into sulphate of lead, which desolved in the sulphuric acid. At this sudden decompositon, sulphurous acid and hydrogen appeared, and sulphur separated.

2. Alloys of lead and bismuth: (*a*) With 10 per cent. of bismuth. The action began at 302° Fah., and continued, slowly and quietly, up to 374° Fah., at which temperature all the metal was destroyed. (*b*) With 4 per cent. of bismuth. The decomposition followed more rapidly than with the 10 per cent. alloy, and was finished at 266° to 284° Fah. (*c*) With 0·73 per cent. of bismuth. The decomposition followed, suddenly and completely, at 320° Fah.

3. Alloys of lead and antimony: (*a*) With 10 per cent. of antimony. This alloy decomposed slowly and steadily; a strong action began at 374° Fah., and ended at 446° to 464° Fah. (*b*) With 5 per cent. antimony. This alloy also dissolved slowly. A more violent action began at 356° to 374° Fah., and the end was at 428° to 437° Fah. (*c*) With 1 per cent. antimony. Here too the decomposition is slow, but a considerable evolution of gas takes place at 482° Fah., and the action is ended at 536° Fah.

4. Alloy of lead and arsenic: Containing 10 per cent. arsenic. This alloy acts very like the 10 per cent. antimony alloy. The action is slower, and ends at 464° Fah.

5. Alloys of lead with 1 per cent. copper: This acts very similarly to the 1 per cent. antimony alloy; a strong reaction begins at 482° Fah., and all the metal is disolved at 536° Fah.

6. Alloys of lead and platinum: (*a*) With 10 per cent. platinum. The decomposition is slow and incomplete, and ends at 536° Fah. (*b*) With 2 per cent. of platinum. The decomposition is sudden and complete, between 500° and 536° Fah.

7. Alloy of lead and tin with 10 per cent. tin: This alloy acts like pure lead; solution takes place suddenly at about 392° Fah.

These experiments show that the addition of a little antimony or copper renders the alloy more able to resist sulphuric acid, while bismuth has a decidedly injurious effect.

INCOMPATIBLES—A CHAPTER FOR STUDENTS.

BY B. F. JAMES.

Medical substances which, when brought together, can not be made to accord, but give rise to changes by which compounds are formed which are inert or unsuitable for administration, are called *incompatible*.

Incompatibility may be of three kinds—Chemical, Pharmaceutical, Therapeutical.

By chemical incompatibility is meant the condition assumed by substances when brought in contact, by which insoluble substances are produced, or other chemical changes take place, which have not been foreseen or intended by the prescriber.

It was formerly supposed, if two or more substances were ordered in a mixture, where under the existing conditions they would form an insoluble compound, that such substances were incompatible. If, for example, some preparation of opium was ordered with a vegetable infusion containing tannic acid, it was considered improper to do so, as tannate of morphia is insoluble; but that this is an error will be at once obvious if it be remembered that many substances insoluble in water may be readily dissolved by the fluids of the stomach and the intestines, and readily absorbed into the circulation. Tannate of morphia and tannates of the other alkaloids are doubtless less readily absorbed than their more soluble salts, but such substances are far from inert, and under certain circumstances may be very effectual as therapeutic agents. Tannate of morphia will cause sleep, tannate of emetia will cause vomiting, and tannate of strychnia will cause all the medicinal and poisonous effects of that alkaloid—except that they act less rapidly. Very many insoluble substances are used in medicine, as calomel, sub-nitrate of bismuth, reduced iron, etc.

The formation of an insoluble substance, therefore, as the result of a mixture of chemical bodies, while it shows *chemical* incompatibility, does not necessarily render the mixture improper for administration; on the contrary, it may be a condition which especially adapts it for the purposes for which it was prescribed, but in all such cases the effect of the insoluble substance must be understood by the physician beforehand, otherwise very different results may be produced from those which he intends; or, as in most cases, the medicine becomes practically useless.

For example, if compound infusion of roses be prescribed for its refrigerative effect as a draught, and a pill acetate of lead be given at the same time, for its astringent action, the effects of one or the other substance would be very much reduced, or perhaps both be completely neutralized, for the sulphuric acid of the infusion would form an insoluble substance with the lead of the pill—sulphate of lead—which is not capable of being absorbed in appreciable quantities.

Insolubility is not always the result of the mixture of substances which are chemically incompatible. For example, solutions of the alkalies, even if very dilute, have the effect of so acting upon the active principles of stramonium, henbane and belladonna, that after a few hours contact, the activity of the latter substances is totally destroyed.

Again, ammonia and acetic acid, used separately for external application, act as rubefacients, but mixed form acetate of ammonium, a neutral salt having no such action.

Permanganate of potassium, chromic acid and nitrate of silver, each act as a caustic, but mixed with organic substance, oils, glycerin, etc., they are decomposed, and their escharotic effects prevented.

The mixture of substances which are chemically incompatible may give rise to explosion or combustion, and thus cause serious accidents; the cases where such changes occur are, however, not common.

Mixtures of creosote or other organic substances with oxide of silver are of this description; spontaneous combustion in such mixtures is not unfrequently the result.

Pharmaceutical incompatibility is applied to substances which are physically incapable of being mixed, or where unsightly or inelegant preparations are the result. Thus, if nitrous ether be added to tincture of guiacum a geletinous mass will be produced.

The same takes place where mucilage of acacia is added to solutions containing alcohol, or if resinous tinctures be added to aqueons solutions the resins will separate.

Infusions or other preparations containing tannin form with iron preparations, inky solutions. Fatty oils are pharmaceutically incompatible with aqueous solutions, become so by the acid of certain substances, as mucilage of acacia, albumen, etc., forming what is called an emulsion.

By therapeutic incompatibility is meant the combination of such substances as possess opposite physiological properties—as the calabar bean and belladonna; cantharides and bromide of potassium; camphor and aconite.

No arbitrary rules are of much service in regard to incompatibles—a practical acquaintance with the properties and combination of substances being the only sure guide against error in this direction.

The following may, however, be of some assistance:

I. Alkalies precipitate the metallic oxides from the salts of the heavy metals; also the alkaloids, in some cases, dissolving them if added in excess, but most frequently leaving them in an insoluble condition.

II. Salts containing volatile acids, as carbonates, acetates, cyanides, etc., are decomposed by strong acids, a salt of the stronger acid being produced.

III. Metallic oxides in contact with acids combine to form salts which may be soluble or insoluble, according to the acid employed.

IV. Vegetable astringents precipitate gelatine, albumen, the alkaloids and many metallic salts.

V. Alcoholic solutions precipitate solutions containing gums, and metallic salts insoluble in alcohol.

VI. Aqueous solutions precipitate tinctures containing substances insoluble in water. Many special cases of incompatibility might be given, but these are best learned by practical experience.—*The Laboratory.*

WHEAT.

Wheat is the most remarkable plant in the world. It is the only one, we believe, whose product is universally used by civilized man; and its native country is not known. Everywhere, where the mean temperature of the country is not below 37°, and the mean summer temperature for a period of three or four months is not above 55° F., wheat is cultivable. The genus of plants to which it belongs, *Triticum* (natural order, gramincæ), contains over forty species. But many of these are merely troublesome grasses; the rest are bread grains, and of these the different varieties of wheat are pre-eminent.

The alimentary value of the various cereal grains and the different varieties of the same grain depends upon the relative amount of the constituent principles of which they are constituted; and of these wheat excels all others in the proportion of those principles which are the most valuable as nutritives.

These principles are:

1. Nitrogenous compounds—gluten, albumen, casein and fibrin.
2. Starch dextrine, sugar and cellulose.
3. Fatty matters—oil.
4. Mineral substances—phosphates of lime and magnesia, salts of potash and soda, and silica.

The relative amounts of these constituents in different varieties of wheat differ almost as much as do the inferior varieties of wheat from other cereals. The differences in wheat apparently depend upon season, climate and soil; and, to some extent, culture. But as a rule, the wheat of Southern climates and warm seasons is generally harder in texture than that of colder climates, and said to be richer in gluten. Judged, however, by the sensible properties of bread, there is some reason to doubt these conclusions. The analyses of wheaten flour produced in different climates and soils have not been sufficiently numerous to settle the question.

According to the analyses of Payen, the relative amount of constituent principles contained in different varieties of wheat, besides about 15 per cent. of water, is as follows:

	Hard Wheat. (Venezuela.)	Hard Wheat. (*Africa.*)	Hard Wheat. (Yyaganrog.)	Semi-hard Wheat. (*Brie.*)	White or Soft Wheat. (Tuzelle.)
Nitrogenous matter....................	22.75	19.50	20.00	15.25	12.65
Starch..............	58.62	65.07	63.80	70.05	76.51
Dextrine, etc..............................	9.50	7.60	8.00	7.00	6.05
Cellulose.....................................	3.50	3.00	3.10	3.00	2.80
Fatty matter................................	2.61	2.12	2.25	1.95	1.87
Mineral matter	3.02	2.71	2.85	2.75	2.12
	100.00	100.00	100.00	100.00	100.00

These analyses of wheat are not, necessarily, indices of the quality of the flour produced from the same—this depends upon the care used in the preparation, the separation or otherwise, of the cortical portion of the grain; the integrity of the starch-granules and other conditions known to experts, which, all other things being equal, may render one brand superior to another. And the same may be said of prepared foods from wheat in other forms.

It is our purpose hereafter to show, by careful comparison and accurate analyses, the nutritive value of our best American flours, so far as may be dependent upon the *mill*, as well as the conditions of climate and soil concerned in the production of the wheat; and we venture to opine in advance that the former condition—its proper treatment in the mill—is no less essential to good flour and its nutritive value, than the climate in which the wheat is grown.—*The Sanitarian:*

A Human Analysis.—Dr. Lancaster, of London, recently analyzed a man, and presented the results of his investigation in palpable form to his audience during a late chemical lecture. The body operated upon weighed 158·4 lbs. The lecturer exhibited upon the platform 23·1 lbs. carbon, 2·2 lbs. lime, 22·3 ozs. phosphorus, and about 1 oz. each sodium, iron, potassium, magnesium, and silicon. He apologized for not exhibiting 5,595 cubic feet of oxygen weighing 121 lbs., 105,900 cubic feet of hydrogen, weighing 15·4 lbs., and 52 cubic feet of nitrogen, likewise obtained from the body, on account of their great bulk. All of these elements combine into the following: 121 lbs water, 16·5 lbs. gelatin, 132 lbs. fat, 8·8 lbs. fibrin and albumen, 7·7 lbs. phosphate of lime and other mineral substances.

TRANSACTIONS OF PHARMACAL COLLEGES AND SOCIETIES.

MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The American Pharmaceutical Association held its twenty-third annual meeting at Boston, the sessions commencing on the 7th and ending on the 11th of September.

After the usual preliminary business, such as the appointment of a committee on credentials, etc., the President, Mr. C. Lewis Diehl, of Louisville, Ky., read his annual address. He alluded to the great number of scientific experimentalists who were at work, apparently pursuing a different course, yet all meeting at last; to the contributions to science made by pharmacists; to the change which had taken place during a few years past, by which the pharmacist is no longer dependent upon his own resources for his chemicals, but on commerce and recent improved chemical methods of preparation of drugs, and can now devote more time to the determination of the purity of his purchases. He called attention to those important remedies of modern employment, jaborandi, salicylic acid and digitaline. He referred to the powerful diaphoretic and sialagogue properties of jaborandi, and to the difficulty of getting accurate chemical accounts of its composition. As it appears in the market, it consists of leaves resembling the common bay leaf, and when chewed, produces a strong flow of saliva. It has been found to contain a volatile oil and an alkaloid, the latter being the active principle.

There were three distinct periods in the history of digitaline and other derivatives of digitalis. By the late experiments of Kossman, it appears that, as digitaline exists in the drug, it is an uncrystallizable principle, freely soluble in water, and readily changed by the action of water, acids or alkalies; and consequently, as it is obtained from the dry drug, it is partly changed, being converted into a crystalline modification, insoluble in water. Both the crystallized and the uncrystallized digitaline are active preparations.

Salicylic acid may now be obtained artificially. It differs from carbolic acid in containing two additional equivalents of carbonic acid, and the problem to be solved was, how to add those two equivalents of carbonic acid to carbolic acid. This was effected by heating carbolate of sodium, in a perfectly dusty and dry state, to a certain temperature, and passing carbonic acid through the mixture. It is then readily purified, and found to be identical with salicylic acid obtained from oil of wintergreen.

The address closed by recommending certain alterations in the constitution, and that a committee be formed, to whom the question of publishing papers should be referred, such committee to have power to refer an objectionable article back to the author, with suggestions for its modification, and that the committees on adulterations and sophistications, and on the drug market, be united.

The Committee on Credentials then reported the names of members as representatives of thirty-five pharmaceutical colleges and associations; the Executive Committee reported the names of one hundred and thirty-five candidates for membership, who were elected.

A nominating committee, to suggest the names of officers for the ensuing year, was next appointed, as well as a committee on specimens, and one to consider and report upon the suggestions contained in the President's address.

The second session was held Wednesday morning, when the following names of officers for the ensuing year were reported, all of whom were elected: President, George F. H. Markoe, of Boston. Vice-Presidents, Fred. Hoffman, of New York; T. Roberts Baker, of Richmond; C. F. G. Meyer, of St. Louis. Treasurer, Charles A. Tufts, of Dover, N. H. Permanent Secretary, John M. Maisch, of Philadelphia. Reporter on Progress of Pharmacy, C. Lewis Diehl, of Louisville, Ky. Executive Committee, George W. Kennedy, of Pottsville, Pa; Joseph L. Lemberger, Lebanon, Pa; William M. McIntry, Philadelphia, Pa; Chas. A. Heinitsh, Lancaster, Pa; John M. Maisch, Permanent Secretary, *ex-officio*. Committee on Papers and Queries, William Saunders, Ontario, Canada; Emil Scheffer, Louisville, Ky; James H. Taylor, New York. Business Committee, Jacob D. Wells, Cincinnati; Paul Balluff, New York City; William C. Bakes, Philadelphia.

The report of the Executive Committee stated that, having been instructed to publish a portrait of a distinguished deceased member in each volume, they had procured an engraving of the late Prof. William Procter, Jr., of Philadelphia, for that of 1874, and steps had been taken to embellish the next volume with a portrait of the late Prof. Edward Parrish. Since the organization of the society there had been a total membership of 1697; lost by death, 136; dropped for various causes, 477; resigned, 101, leaving a balance of 983. The total number of honorary members was thirty, of whom ten have died. The report then closed with brief obituary notices of the members who had deceased during the year.

After a short address of thanks for the honor of his election, the President elect took the chair. John M. Maisch, Permanent Secretary, then read his annual report.

This Association, he stated, had extended an invitation to the Fifth International Congress to meet in Philadelphia, in 1876, which was laid before that body at its meeting in St. Petersburgh, but no decision had been arrived at, the selection of time and place of meeting being in the hands of the executive committee of that organization. The congress expressed itself, by resolution, in favor of meeting in London, England, and several speakers advocated an interval of five years before another meeting. After the adjournment of the International Congress the members met and divided among themselves a draft of an international pharmacopœia, prepared by the Paris Pharmaceutical Society, and agreed upon the principles which should guide the review and completion of the draft. It was decided that the evaporation in vacuo should not be directed in the preparation of extracts; that the fluid extracts of the United States Pharmacopœia should be critically examined; and that the temperature for taking the specific gravity of all liquids should be uniformly 59° Fahrenheit. The critical review of the submitted draft would be completed by December, when it was to be multiplied and communicated to the various phamaceutical societies. At the meeting in Louisville the Association decided to participate in this undertaking, and correspondence to that end was now in progress. A cordial invitation had been extended to the pharmacists of all nations to meet with the A. P. A. in 1876. The Secretary recommended that the Association communicate directly with the various national and local societies of foreign countries upon this subject. The Philadelphia College of Pharmacy had invited the members of foreign societies to make the college building their headquarters, and proposed to engage proper persons to give needful and useful information to strangers. The Secretary recommended that a committee of arrangements be apointed, with power to act at the Centennial Exposition; pharmaceutical and allied products from all parts of the world would be exhibited, so that no exhibition by the society was desirable. The Secretary read a paper on American Pharmacy and its relations to public health, before the American Public Health Association, in Philadelphia, in November, 1874, and had discussed therein the importance of pharmacy to the public welfare and health, the large amount of spurious and adulterated drugs and preparations formely imported into this country, and the salutary effect of the drug law; also home adulterations, patent medicines, and measures to decrease their sale, and other questions of importance to the pharmacist and the public; urging particularly the necessity of the enactment of laws regulating and restricting the sale of drugs and medicines to properly educated pharmacists.

The Committee on Unofficinal Formulæ made a report; the portion relating to elixirs was referred to the Committee on Elixirs. The Treasurer reported a balance of $873.16, and that the principal disbursement in 1874 was for the publication of the bulky volume of over 1000 pages of the Proceedings.

A very important report was then read by Dr. A. W. Miller, of Philadelphia, on Adulterations and Sophistications. Advertisements had been inserted in the pharmaceutical journals requesting information of adulterations and sophistications of drugs, chemicals and kindred articles. Some of the important adulterations had been brought to the notice of the pharmaceutical meetings of the Philadelphia College of Pharmacy, and in several instances their fraudulent character exposed and their further sale materially affected. Essential oils were largely and clumsily adulterated, although it was not always possible to prove this by chemical tests. A New Jersey distiller had frankly admitted that all the commercial oils of cedar, hemlock and spruce, made by him and his acquaintances, were prepared by putting the branches of the respective trees into the still, with an amount of turpentine proportioned to the price they expected to realize; and prided himself on the superiority of these *distilled* oils over those made by mere admixture with turpentine. As the major portion of the more expensive oils are consumed by bakers, confectioners, soapmakers and bottlers of mineral waters, who have no means of testing them, the necessity of better means for protection, and for the punishment of the guilty, was apparent. The writer had, on two occasions, purchased cans of oil of lemon, one of which contained but seventy-five per cent. of oil, and the others scarcely thirty-three per cent. Adulterations were becoming common in Europe as well. A gentleman who had held responsible positions in the largest German houses had shown him a full line of recipes for mixing and cheapening the prominent oils, which he was anxious to compound in this country. He had also been informed by the representative of a French firm, in Grasse, that the cheap grades of lavender, rosemary and red thyme, sent to this country by his firm and other manufacturers, contained, at least, seventy-five per cent. of turpentine. The report proceeded at great length to a description of the adulterations and sophistications which had been brought to the notice of the committee, both by direct communication and through the American and foreign scientific journals. A caddy of musk, weighing 19½ ounces, was proved, in an English court, to contain only 6½ ounces; honey, made by melting cane or other sugar in a decoction of slippery elm bark or a solution of gum and starch; linseed oil adulterated with hemp, fish, rosin and mineral oils; beeswax, consisting almost entirely of black earthy matter, neatly coated with handsome yellow wax, by repeatedly dipping it into the melted wax, and also adulterated with paraffine; caster oil, composed of lard and croton oils, etc.

After dinner, given to the Association in the banquet room of the hall, by the pharmacists of Boston, the members proceeded to inspect, officially, the exhibition of specimens, druggists' sundries, etc., in the upper hall. The intrinsic value of the goods exhibited was said to largely exceed that of any previous session, and was, undoubtedly, as fine a display of pharmaceutical and allied products as has ever been seen in this country.

The third session opened in the afternoon, with an invitation to the medical faculty of Boston and vicinity to attend the meetings of the Association. Professor Maisch then presented the report of the Committee on Legislation.

There had been a question raised whether the Supreme Court of the United States would sustain the pharmacy laws passed by the several States, or declare them unconstitutional. The committee had taken legal advice, which was in favor of this constitutionality. The laws had been sustained in the lower courts. The pharmacy laws of the several States were generally carried out in a proper spirit; frequently more than twenty-five per cent. of the number examined were rejected. A pharmacy law had been passed in New Hampshire and in the Province of Quebec. In the Province of Ontario a bill was presented to the Legislature, but was withdrawn on account of the opposition of the medical profession. The matter of the stamp tax under the internal revenue laws of the United States, which had given such trouble to the pharmacists and druggists, had been satisfactorily settled by section twenty-two of the so-called "little tariff bill," providing that nothing contained in the internal revenue laws be so construed as to authorize the imposition of any stamp tax upon any medicinal articles prepared by any maufacturing chemist, pharmacist or druggist, in accordance with a formula in any standard dispensatory or pharmacopæia in common use by physicians and apothecaries, or in any pharmaceutical journal issued by any incorporated college of pharmacy, when such formula, and where found, shall be distinctly referred to on the printed label attached to such article, and no proprietary interest is claimed therein; and that no stamp should be required when the formula of any medicinal preparation was printed on the label attached to such article, and no proprietorship was claimed. These requirements, although a departure from the custom hitherto followed, would entail no hardship upon the pharmacist and druggist, and would enable him to keep on hand, ready for delivery, any legitimate medicine, without being ranked with the manufacturer of patent medicines.

The Committee on the Ebert Prize reported that they had awarded it to Charles L. Mitchell, of Philadelphia, for an essay on "The Active Principles of the Officinal Veratrums."

The report of the Committee on Elixirs was read by Mr. William McInyre, of Philadelphia. They were of opinion that such a nomenclature should be adhered to as would express the remedial composition of the preparation, and thus make available such as possessed therapeutic merit. A uniform simple elixir for general purposes would meet all ordinary requirements, and serve as a guide by which the physician might determine what suited the taste of his patient. The tendency of the Pharmacopœia was to present simple preparations, more thoroughly representing the drugs from which they were prepared. More attention was demanded, therefore, in the construction of extemporaneous formula, and a thorough knowledge of the various spirits, syrups and aromatic waters would give a wide field for the choice of auxiliaries, correctives and vehicles. The information acquired, the preparation of mixtures which would conform to the standard alcoholic strength of elixirs, and yet be possessed of medical virtue from chemicals and galenical preparations, would become an easy task. The report then presented a revised list of formula, containing some alterations of those in use.

The propriety of publishing papers in the pharmaceutical and medical journals, previous to there publication in the volume of the Association, being under discussion, the following resolutions were adopted:

Resolved, That the various pharmaceutical and medical journals are cordially invited to publish whatever notes they may desire to make of our proceedings and of the scientific papers which are read before our meetings.

Resolved, That when authors of scientific papers have prepared copies or abstracts of their essays previous to the meeting of the Association, they shall be at liberty to distribute such copies or abstracts at any time subsequent to the official reading of their respective papers, provided that the paper is always headed, in publication, by the statement that it has been read at our meeting.

After the presentation of a report of a committee on the subscription of pharmacists to a memorial to Liebig, Mr. Saunders, of Ontario, read a paper, by Joseph P. Remington, of Philadelphia, on "The Ready-made Pills of Our Day," showing, by careful experiments, that a plain uncoated pills was to be preferred, in point of solubility; next in order, the sugar-coated, the compressed and the gelatine-coated pill. Mr. B. F. Stacey, of Massachusetts, read an essay on Paraffine and its Modes of Manufacture and Employment, and James F. Babcock referred to its utility as a substitute for wax in instruments, and to a mixture of paraffine and wax and lard oil, which, under the name of oleo-paraffine, had been used as a substitute for lard. Mr. Joseph Lemberger, of Lebanon, Pennsylvania, in an essay on paraffine oil, referred to its use for producing a permanent base for ointments.

Mr. T. R. Baker, of Richmond, Virginia, presented an extract from the minutes of the Pharmaceutical Association of that city, Nov. 20, 1874, embracing a series of resolutions to be presented to the Richmond Academy of Medicine, urging the importance of writing prescriptions in a legible hand, without erasures or interlineations; of using technical language, and abbreviations of the Pharmacopœia and the U. S. Dispensatory; of writing directions for use and dose as a guide to the dispenser in case of error in quantity of any active ingredient; that when an unusual dose or quantity of an active and potent medicine is prescribed, the prescriber should affix a caution mark or sign, to inform the dispenser that he is aware that the dose is unusual; that the words "not renewable," should be written on prescriptions which they did not desire to be renewed; also the importance of using every possible means to stop the sale of opium, morphia and chloral, except upon competent medical authority. He requested, in behalf of his delegation, that these resolutions be referred to a committee to report upon them during the present meeting. A communication upon similar objects was also received from the delegation from the Philadelphia College of Pharmacy.

The fourth session was held Thursday morning, and was mainly devoted to essays and answers to queries propounded last year. An essay by Andrew Blair, of Philadelphia, was read, on the Various Forms of Drug Mills; after which, Dr. A. W. Miller, of Philadelphia, referred to the uses of Mezquite gum in Pharmacy, and as a substitute for gum arabic.

The report of the Committee on Maximum Doses was presented by Dr. W. H. Pile, of Philadelphia. The committee reported that, in view of the wide difference in the statements of different authorities in regard to the quantities of potent remedies which could safely be administered, they had come to the conclusion that an arbitrary list of maximum doses made from such conflicting authorities would be of no practical utility. They, therefore, suggested that a committee be appointed to confer with the American Medical Association on the subject of maximum doses, as well as the proper signs to be adopted to designate the correctness of larger doses when intended by the physician, as an understanding might thus be arrived at which would prove of practical value to the physician as well as the pharmacist. The report was accepted and the recommendation adopted.

Mr. C. Lewis Diehl then presented an elaborate report on the Progress of Pharmacy.

The report was divided into five sections: Pharmacy, under which head was comprised the various pharmaceutical papers; Materia Medica, which gave the results obtained during the year in the history of crude drugs and their botanical characters; Inorganic Chemistry, giving the results of investigations of inorganic substances; Organic Chemistry, giving the results of investigations upon the crude vegetable drugs during the year, with the progress in general organic chemistry.

A number of papers were then presented, relating to phosphorus and phosphoric and hydrobromic acids. Mr. T. R. Baker, of Richmond, Va., in an essay on chloral hydrate, confirmed previous experiments by other observers, to prove that it possessed powerful antiseptic properties, and could be used to preserve anatomical preparations much better than any of the liquids heretofore used for that purpose.

The fifth session was held at 3 P. M. Essays were read on Suppository Moulds; on Tasteless Iron Combinations; on the Use of too Strong Alcohol as a Cause of Precipitation in the Preparation of Spiritus Ammoniæ Aromaticus (U. S. P.); on the Manufacture of Iodoform; on the Propriety of Substituting an Officinal Liquor Chloroformi Comp. for uncertain Chlorodized Nostrums; on Matico; on Insect Infestations in Rhubarb; on Pancreatin, which, it was stated, as the result of experiment, was destroyed when taken into the stomach, and could, therefore, have neither physiological nor therapeutic effect; on Explosive Mixtures of Carbolic and Nitric Acid, etc. It was stated by Dr. Jos. Roberts, of Baltimore, in regard to the purity of hydrate of chloral, that all chloral, from whatever source, contained some uncombined chlorine, and would afford a precipitate of nitrate of silver, though the amount of precipitate was very slight. When tested for the amount of chloroform, the practical yield came very nearly to the theoretical amounts which should be present. He suggested that hydrate of sodium yielded a better result than hydrate of calcium for the purpose of separating the chloroform. Formic acid was the most injurious contamination likely to be found, and was best tested by the amounts of alkali necessary to neutralize it, which could be determined by the ordinary process of volumetric analysis.

Secretary Maisch spoke of the immense traffic in patent medicines. The Association professed to be opposed to the sale of these medicines. The efforts of pharmacists in this direction would amount to nothing so long as patent medicines were called for by the public. The question had been agitated, What was the best means of informing the public of the dangerous nature of many of these nostrums? Dr. Frederick Hoffman, of New York, had suggested the publication of a health almanac, similar to those issued by the proprietors of patent medicines, which should contain analyses of such preparations. Circulars had been prepared upon this subject.

Mr. Bullock, of Philadelphia, read an elaborate and valuable paper, which was cordially received, "On the preparation of the various bromides of the organic and inorganic bases used in American pharmacy." The writer gave formulæ for the preparation of the various bromides and hydrobromates.

Essays were also presented on Scammony; on Calabar Bean, giving formulæ for making tinctures, solid and fluid extracts, calabarized paper and calabarized gelatin; on Analysis of Commercial Citrate of Iron and Quinia for the Quinia Strength; on the Solubility of Sulphate of Morphia, and the Relation of Physician and Pharmacist.

At the sixth session, on Friday morning, P. W. Bedford, of New York, read papers on impurities in ether and on commercial bicarbonate of sodium. Volunteer papers were also read on methods of packing herbs, and on cod liver oil; and Mr. Saunders, of Ontario, presented one by J. P. Remington, of Philadelphia, on a new method of administering medicines. It consisted simply of a couple of discs prepared from a flour paste; the medicinal material is placed between the discs, which are then placed in a spoonful of water, and as soon as it becomes moistened can readily be swallowed without experiencing any taste of the medicinal ingredient.

James F. Babcock suggested a new method of preparing iodide of arsenic, more desirable than that given in the United States Pharmacopœia. Papers were read on *Grindelia Robusta* as a specific for the poison of poison oak, and a valuable remedy for asthma; on objections to the Pharmacopœia method of making *spiritus ammoniæ;* and on the preservation of *diluted hydrocyanic acid*, by distilling the acid and alcohol together. Mr. Saunders showed that elastic vulcanizable gum could be produced from the common milkweed—*asclepias cornuti*—by the action of fermentation on the finely-powdered weed. A number of other papers of value were read by title, and referred for publication.

An interesting discussion now ensued on the following resolution, adopted on the previous evening, at the CONFERENCE OF TEACHING COLLEGES OF PHARMACY:

"*Resolved,* That this Conference communicate to the American Pharmaceutical Association that they are in possession of documentary evidence that the Tennessee College of Pharmacy has offered, through its treasurer and acting secretary, to examine candidates and graduate them without their attending the customary courses, just the same as if they had attended all the lectures."

The documentary evidence was read, consisting of a letter from Mr. Benj. Lillard, which was substantially the offer contained in the above resolution.

P. W. Bedford, of New York, offered a resolution, which was adopted, that a committee of three be appointed to communicate with the Tennessee College of Pharmacy, and inquire whether such action was authorized by the college, or was undertaken on the individual responsibility of Mr. Lillard.

Mr. Lillard seconded the motion, and explained the action of the Tennessee College. The latter college conferred upon its graduates the degree of Doctor of Pharmacy. The other colleges conferred the degree of Graduate in Pharmacy. Persons who were already graduates of other colleges had applied to the Tennessee College for its degree, preferring the title of doctor. It was customary for colleges to recognize attendance upon courses of instruction in other colleges, and it was the intention of the Tennessee College, and the meaning of the letter which had been read, to signify a willingness to confer the degree of doctor upon graduates of other institutions, without requiring attendance upon all lectures. The degree would not be conferred without examination. He defended the action of the college, and courted the fullest investigation.

Mr. Babcock thought the Association had nothing to do with the matter, and moved its indefinite postponement, which was lost.

Mr. Bullock, of Philadelphia, maintained that the matter was properly before the Association, and was of serious importance to the pharmacists of the country and to the public. He thought it could not be acted upon intelligently without further evidence, and supported Mr. Bedford's motion.

After resolutions of thanks for courteous attention bestowed by the profession and people of Boston, and the usual final business, including the appointment of Dr. A. W. Miller, of Philadelphia, as Local Secretary, the Association adjourned to meet in Philadelphia on the second Tuesday of September, 1876.

THE ENTERTAINMENTS.

Reception at St. James Hotel.—The reception at the St. James Hotel, on the evening of Tuesday, afforded the members the first opportunity of meeting each other socially, and of forming acquaintance. There were about four hundred ladies and gentleman present through the evening.

At eleven o'clock the company entered the grand dining-room, in which accommodations had been provided for four hundred persons. Joseph Burnett, as Chairman of the Local Executive Committee, sat at the head of the center table, with the President of the Pharmaceutical Association on his right.

Previous to inviting the company to partake of the collation, the Chairman arose and said:

Mr. President and Gentlemen of the American Pharmaceutical Association: The intelligent public acknowledges the value of your Association and the importance of your work; and the press, swift to chronicle passing events, has already told us of your coming, and the good work which you have done and are doing. I have only to add that the druggists and chemists of Boston, in whose behalf I have the honor to speak to you, bid you welcome—you and your wives and daughters; and they cordially invite you to partake of such hospitality as they may be able to offer.

Mr. Burnett's remarks were applauded warmly, and the President of the Association, C. Lewis Diehl, replied briefly. He said: When I accept the hospitality which you offer, it is with thanks; and I wish, at the same time, to express the pleasure which we feel at the reception which you have given us. We were led to believe, from the preparations which were making, that Boston would receive us in a most hospitable manner, but the manner in which you have received us far exceeds our expectations. I will return thanks to you and your associates in behalf of the ladies and gentlemen who are your guests.

The bounteous supper next received attention, and for an hour or more the pharmacists and partners partook of the spread before them. The company dispersed at a late hour in the best possible mood.

The Ladies' Carriage Drive.—On Wednesday, at half-past nine o'clock, the ladies accompanying the visiting members, to the number of nearly one hundred, took carriages for a field-day in the suburbs. About thirty barouches were called into requisition for the purpose, the entire party being made up of quartettes—three visiting ladies and one resident to act as chaperone. The first trip was to Jamaica Pond, and the first halt was made at the residence of Mr. Joseph T. Brown, where the visitors were cordially welcomed and hospitably entertained. A rest of three-quarters of an hour here, and the party left for the Chestnut Hill reservoir, driving slowly around both basins, and then took the road to the residence of Mr. Alvin Adams, where a stay of sufficient length was made to enable every one to inspect the beauties of the place. Fresh Pond was reached at half-past one o'clock, and at two, dinner was served. A social chat on the broad piazzas, and some excellent music from the Germania orchestra, occupied the time until four o'clock, when the carriages were again entered, and a visit paid to Mount Auburn. The ride around the colleges to Bunker Hill was enjoyed. At an early hour the carriages passed through the burnt district, on the way to the St. James Hotel.

The Social Levee.—On Wednesday evening the Association had a brilliant levee, for the purposes of which a very large part of the Odd Fellows' building was occupied. The ball rooms and ante-rooms of Mons. Arcan's Academy were occupied all through the evening by a brilliant gathering of ladies and gentlemen. It was estimated that from six to seven hundred ladies and gentlemen visited the building during the evening. Supper was served in the banquet Hall. Dancing began at eight o'clock and ended at two o'clock A. M.

The Dinner.—On Wednesday, at one o'clock, dinner was served in the banqueting hall. Seats were provided for three hundred persons, and were all occupied. Dr. T. L. Jenks, Vice-chairman of the Executive Committee of the Boston druggists, called the company to order, and introduced President Markoe, who responded in a short speech. The lcoal Secretary, Mr. S. A. D. Sheppard, was also called upon, and made an effective address at some length. He disclaimed any ability as a speaker, saying that his forte was work. He believed this to be true of his profession generally; and that whatever had been done in the direction of making the meeting a success, was the result of hard, earnest work. Mr. Sheppard paid a deserved tribute to the liberality of the trade, stating that no person who had been solicited to contribute for the entertainment of the visiting members had failed to contribute generously. His labors as local secretary had brought him into contact with the druggists of Boston generally, and since the meeting had begun he had made the acquaintance of many from other parts of the country, and he believed them to be a noble body of men, in whose hands the future progress and high standing of pharmacy as a profession was assured. Further remarks were made by Professor John M. Maisch; C. A. Tufts, Treasurer of the society; P. W. Bedford, of New York; T. R. Baker, of Richmond; and Charles Bullock, of Philadelphia.

The Harbor Excursion.—The closing entertainment, provided by the Boston druggists for their friends from other cities, was a harbor excursion, which was arranged upon the same generous scale as has characterized the arrangements of the whole week. Soon after two o'clock the steamer *Gov. Andrew* left Rowe's wharf with about five hundred and fifty ladies and gentlemen on board. A round trip to Downer's Landing was made, where at about half-past five o'clock a clam bake was served, and afterwards an hour or two was passed in dancing, the boat returning from the landing at half-past eight. On the trip down an informal meeting was held between decks, which was called to order by Dr. Jenks, and Mr. Burnett having been called to the chair, speeches were made by Messrs. Solomon Carter, William F. Horton, William B. Blanding, of Providence, James T. Shinn, of Philadelphia, and others, all of which went to prove that the past week had been a pleasant as well as profitable one for members of the Association.

The various social entertainments were under the especial charge of

Messrs. Joseph Burnett, Dr. T. L. Jenks, E. H. Doolittle, W. F. Horton, and S. M. Colcord; and the universal satisfaction expressed with the various arrangements showed that their efforts were fully appreciated.

The exhibition was a grand success, which was due to the indefatigable efforts of Mr. S. A. D. Sheppard, the local secretary, assisted by Messrs. Kelley, Doolittle, Gilman, Babcock, and others.

REVIEWS AND BOOK NOTICES.

The Chicago Medical Journal and Examiner, as its name implies, is a union of two medical journals, formerly published in the interests of Rush and Chicago medical colleges of this city.

It is now issued by a stock company, with an editorial staff of five—one from each college and three from the profession at large, which, with the private reputation of its editors, will be a sufficient guarantee of its non-partizanship, and the purity of its ethics.

The editors offer compensation for articles of merit, which is the only way of securing interesting matter in these days of medical journals without number. This number presents a very creditable appearance. There are several valuable original articles and translations which are interesting, particularly the one upon Hermaphrodism.

The excerpt department now appears under the title of "Summary of Progress"—an improvement over the word "Loot" in the old *Journal.* This department shows careful study; the articles are all of a practical nature, and have been condensed without loss of original value.

The review department is very creditable. Many of the reviews in medical journals are mere laudatory articles, comprising the preface of the work and the name of the publishers, without a glance at the contents. This fault has not been committed in this number, and we hope it will continue to remain free from it.

Nearly two pages are devoted to a list of journals and pamphlets received. We question the practical value it is to the reader. Too much space, also, is occupied by mortality statistics.

The advertising pages show an improvement over most medical journals, although there is room for considerable improvement. It would be better to leave out some of the patent medicines in the advertising pages.

Taken as a whole, it is a welcome change from formerly; and if carefully conducted will prove a success. All of which we most heartily wish for it.

THE FUSEL OIL IN ALCOHOL.—To detect this Bettelli, in *Gaz. Chim.*, recommends that 5 c. c. of the suspected alcohol be diluted with six to seven volumes of water, and the mixture well shaken with fifteen to twenty drops of chloroform. By evaporation, the separated chloroform leaves behind any fusel oil that may have been present, and the latter can then be recognized by its smell, and by etherification by means of a mixture of sulphuric acid and an alkaline acetate. In this way, so small a quantity as ·05 per cent. of fusel oil in alcohol may be detected.

THE PHARMACIST.

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ADULTERATIONS.

BY JOHN M. FRANCE.

The great competition at the present time existing among importers, jobbers, and wholesale dealers of drugs, chemicals, and other pharmacal merchandise, throughout the United States, has led to a regular system of adulteration of nearly every article of the materia medica. This is due to the fact that to be successful in a business way is "*to sell goods cheap.*" This mode of competition in trade certainly can not be styled a "healthy one," although a commercial phrase says that "competition is the life of trade;" yet we may be pardoned if we cite another crude saying, which is, "What is fun to the boys is death to the frogs." This becomes true when competition goes so far as to ignore wholly the *quality and purity* of goods, in consideration of *low* prices. How can the evil be remedied, and this prevailing disease of the trade be cured? Much good in this direction has and is being done by the American Pharmaceutical Association, through its committee on adulterations and sophistications, who, in their annual report, expose many of "the ways that are dark and the tricks that are vain" of the trade, yet a radical cure can not be effected so long as the retailer and dispensing pharmacist will purchase goods because they bear the respective commercial title or label, *and are sold cheap.* The reform must commence with us at home; and we should not be guilty of offering a premium to dishonesty by our willingness to purchase goods which we can easily calculate can not be produced at the prices offered at in the market. It certainly is not more reprehensible to produce than knowingly to dispose of articles of an inferior character. "For sure the pleasure is as great in being cheated as to cheat." My attention has been directed to ferret out the shortcomings in quality and purity of goods that have passed under my observation during the last few years, and I will briefly enumerate the more flagrant ones. Under the head of willful adulterations, I will mention, among essential oils, that of oil of cloves, to which one-third of its bulk of alcohol is added, so that the retailer can be furnished in lots of one-quarter or one-half pound at from $3.50 to $3.75 per pound, which is the actual cost per pound to the jobber in the original package. I can say the same regarding specimens of oil of sassafras, wintergreen, peppermint and anise examined. The latter oil attracted my attention in its remaining in a perfect transparent liquid state, although it was exposed to the severe cold of last winter. To test it further, I subjected it, by the aid of a freezing mixture, to a cold of —25 Fahr., whereby not the slightest impression on its state of fluidity was produced. On further testing of this oil, it revealed that it had been admixed with about an equal bulk of alcohol, and a small per cent. of castor oil to give it "body." Under the head of substitutions I have noticed *mustard oil* (the bland oil obtained from mustard seeds by expression) substituted for the more expensive oils of benne and olive; *peanut* and *cotton seed oil* substituted for olive oil. I also have examined an original package of oil of almonds, put into the market by Roure-Bertrand Fils, Grasse, France, which gave none of the reactions laid down for almond oil, and which was subsequently found to have the same reactions and properties of an oil obtained by expression from peach nut meats. The most reliable test for the fatty expressed vegetable oils is concentrated sulphuric acid. The change of color is very characteristic, and a knowledge of the same can easily be acquired by a little manipulation with specimens of oils made by oneself for the purpose, and retained for future comparison with the reaction produced on samples of commercial oils. Substitutions have also been observed by me in *essential oil of chamomile*, for which was furnished a mixture composed of castor oil and alcohol, flavored with a few drops of the pure oil of chamomile, and a blue color imparted by the addition of a solution of litmus. *Oil of cade* I have found to be simply liquid tar, somewhat flavored with oil of juniper. *Copaiva* I have found, as furnished by a so-styled New York importer, (ought to bear the name of a manufacturer) to be a mixture of linseed and castor oils, with an addition of sufficient oil of turpentine and copaiva to give the mixture the proper consistency, and impart to it some copaiva odor and taste. Superior (?) English milk of sulphur I have found, as was to be expected by former revelations made by our English brethren, to be a mixture of flowers of sulphur and whiting. A fine lot of pure honey, of fine color and flavor, and styled "boxwood flowers," was a fine specimen of syrup made from corn starch.

ACCIDENTAL IMPURITIES.—*Acetic acid containing copper*—In preparing a lot of acetate of potassa, I noticed a blue coloration whenever the alkali was in excess of the acetic acid employed. The copper was subsequently precipitated out of the solution by the aid of sulphydric acid, which, when weighed, showed the presence of nearly one per cent. of acetate of copper in this sample of acetic acid. A fact well known, but generally not always observed, is the risk of allowing liquors to stand in vessels composed of iron, or in tinned iron, where some iron surface may be brought into contact with the liquor. When this is the case, the liquor is acted upon by the iron, and the color of the liquor is changed to a very unnatural green color, usually making it thereby an unsalable article. It is known that occasionally a barrel of brandy, whisky, or other strong alcoholic liquor, is made unsalable by the accidental falling into, or driving into, the interior part of the barrel an iron nail, which in time gives color to all of the spirit. In connection with this I will mention a phenomenon I observed in bay rum. When this spirit is rubbed up with carbonate of magnesia and filtered, it acquires a most brilliant golden yellow color, which again disappears on the addition of an acid. A sample of valerianic acid, bearing the label of E. Merk, Darmstadt, was lately employed in the manufacture of valerianate of quinia; it had but a very feeble acid action, and the product obtained was a very unsatisfactory one, both to its general appearance and odor. The valerianate of quinia produced was very insoluble in cold and hot water, and had the peculiar odor of apple oil. I also call attention to the short weight of *French quinia;* an average weight of ten ounce bottles weighed by me was 403 grains; some of the bottles fell short from 50 to 60 grains each. The sugar coated pills of iodide of potassium, of a very prominent manufacturer of this novelty of "elegant pharmacy," having been complained of regarding their solubility, (they having passed through the organs of digestion without any apparent effect or impression on the pilular form), when a number of these pills were placed into a flask with water, and boiled for an hour or so, no further impression could be produced than that of removing the sugar coating. On further examination it was found that the hard and insoluble body consisted of magnesia.

OMAHA, NEBRASKA.

PHARMACAL ITEMS.

BY CHAS. F. HARTWIG.

Much annoyance is often experienced in the dispensing of ointments and cerates, due to the fact that the prescriber does not take into consideration how difficult it is to incorporate certain bodies as water, spirit, glycerin, extracts, salts, etc., with a fatty substance, so as to form a homogeneous whole. The following method has aided me greatly whenever this obstacle has presented itself to me: I first make a perfect solution of the substance to be incorporated with the fatty body, either by liquifying with the aid heat or the addition of some solvent. Then heat the fatty body gently, so that it is in the melted state, and add to it small quantities at a time of the substance in solution, with constant stirring, observing the same rule as that laid down for forming a good emulsion with the mortar and pestle.

A solution of quinia and its salts are known to be thrown out of solution by iodide and bromide of potassium. But it is not generally known that the addition of an excess of the potassium salt redissolves the precipitated quinia, and forms a perfect and stable solution. Some one has already taken advantage of this fact, and is putting on the market a remedy styled "Elixir Iodide of Quinia—a valuable tonic and alterative."

The following prescription has given rise of some controversy between some members of the medical and pharmacal profession of this city:

℞ Sulphate of quinia	20 grains.
Bromide of ammonium	4 drachms.
Pyrophosphate of iron	1½ drachms.
Diluted phosphoric acid	2 fluid ounces.
Water	2 " "

Mix and make a solution.

The prescription was prepared by a competent pharmacist, who furnished a preparation of not a very transparent appearance, and the prescriber feeling dissatisfied thereat, ordered the same to be put up at some other reliable pharmacy. This was done, but the result was as that of the first. Still not being satisfied, it was again prepared at two other stores with the same result. As a last trial he directed the prescription to be taken to a "particular store," who had always furnished him the preparation in the desired "elegancy of a transparency." This was done, and behold it was just as the disciple of *Esculapius* had predicted the preparation to be.

The query naturally arises: How is this? Was it produced by the "slight of hand," or the superior quality and purity of the articles, that entered into the preparation as dispensed by the knowing one?

Another prescription that has caused some trouble is the following:

℞ Salicin	½ drachm.
Tincture of chloride of iron	½ fluid oz.
Chloride of potassium	1 drachm.
Simple syrup	4 fluid ozs.

Mix.

The difficulty arises when the prescription is put up in the order in which the ingredients are written. The salicin dissolves readily in the tincture of iron, and if the chlorate of potassium be now rubbed up with the simple syrup and then added to the first solution, no change will take place; but if the chlorate of potassium be rubbed up with the salicin, or added to the tincture of iron in which the salicin is in solution, a violent reaction and decomposition will be the result.

THE DEPOSITS OF SULPHUR IN WYOMING TERRITORY.

Examinations along the line of the Union Pacific railroad have brought to notice numerous deposits of sulphur. We do not find any considerable bed or strata of sulphur along the line of the road until we approach Point of Rocks station, 805 miles west of Omaha and 227 miles east of Ogden. A little more than a mile to the east of the station, in a bluff nearly fronting Bitter creek, there is a sulphur bed 13 feet in thickness. The mineral lies in a sedimentary formation which is cretaceous, though there are no fossils to confirm such opinion. But above the sulphur strata, the presence of lignite coal and rocks, almost made up of leaves and stones of *populus arctica*, *platanus*, *cyperus*, *fagus*, and *juglans*, and a form of *tilia*, are found. These occupy a place below the coal and above the sulphur, in a shady sandstone. The rock rests upon amorphous masses of sulphur, and they again upon crystallized sulphur associated with saltpetre and alum. One mile north of this deposit there has been opened a sulphur bed nine feet in thickness. Here the sulphur is found in acute octahedrons, with secondaries, and in massive formation. The deposit is mostly of an orange yellow color, with a resinous lustre, and contains a small quantity of selenium. This deposit occupies the same geological position as the former, with the rocks of the tertiary coal period above it, but the coal is entirely wanting. In the sandstone above this sulphur there are well preserved remains of *Quercus*, *Cornus*, *Acer*, *Betula*, *Populus*, *Fagus*, and other sylvan forms.

Sixteen miles north of this point there have been opened two sulphur beds much more extensive than the one named, where thousands of tons could be mined yearly. These deposits are in the same sedimentary formation, and the rocks present the same lithological characters. These tertiary beds are unmistakably marine, there being large beds of *Ostrea Idriaensis* in the coal beds or above them. The upper cretaceous and the lower tertiary beds can scarcely be separated here, as the former seems to closely blend with the latter or upper beds.

Near Evanston, the third city in population in Wyoming, are extensive sulphur deposits, not less pure and extensive than those described. These sulphur beds are all in the same general geological formation, and may be determined to occupy an extensive range. We have traced these deposits over many miles in extent, and from the lithological character of the various districts and their rocks, association and relation, can very accurately determine their extent.

Only the surface has been seen of these sulphur beds, or edges of the strata where the elevation of the same has brought them up to sight. The dip of the sulphur strata is east and southeast, and when penetrated a few feet proves to be of a superior quality to the exposed mineral.

We desire to give the reader a history of this mineral, occurrence and uses over the globe:

Sulphur is an elementary crystalline substance, crystallizing in the trimetric system in acute octrahedrons. The crystals are often secondaries; and it also occurs massive. It is fusible, brittle, volatilizable, and highly inflammable. The lustre is resinous; color, light to yellow; streak, a sulphur yellow, and transparent to translucent; its hardness is 2.5, and specific gravity 2.06. Sulphur at a heat above 232 degrees Fahr. crystallizes in oblique rhombic prisms. With a temperature above 300 degrees, it becomes soft and plastic. It is insoluble in water, dissolves in ether, fat oils, oil of turpentine, and petroleum.

Sulphur is used for the manufacture of gunpowder, bleaching, for matches, to make sulphuric acid, brimstone, vermillion, and for preventing disease in the grape-vine in Germany, France and America. The use of this article for the last named purpose is largely increasing the demand. When sulphur has been melted at its highest point, and in cooling assumes a plastic condition, impressions of seals, gems, and other articles are made.

Sulphur is found in the mines of Santa Catalda, in Italy; near Cadiz, in Poland; at Berne, in Switzerland; in Sicily, at Terraeli Falco; in Deception Islands, New Zealand, Mexico, South America, Red Sea, Hungary, New Mexico, Arizona, California, Louisiana, Wyoming, and several other States.

Sulphur also occurs at sulphur springs, where sulphuretted hydrogen is evolved. It is found in the craters of volcanoes, formed in a powder which was deposited by sublimation. In other volcanic regions it occurs in stalactitic forms where the same has been melted. Usually the sulphur that we find deposited about and from thermal waters is of a very light color. The sulphur got from the craters of volcanoes has to be distilled before it is fit for use. Sulphur is made by treating copper ores, and is also made from the bisulphuret of iron; but the yield is only 27 per cent., and neither of them pay.

In Sicily, the sulphur is found in butts of black, bituminous shale, slate and limestone, often associated with salt and gypsum. The sulphur lies in thin layers between the rocks, and sometimes passing into them, but always conforming to the stratification of the rocks of sedimentary origin, probably cretaceous and covered with the tertiary. This Sicily deposit extends over many miles, but carries only thirty per cent. of sulphur. From these deposits, the great bulk of sulphur consumed in the world is drawn. If labor was not extremely low, this could not be worked at a profit. To illustrate the great expense of sulphur mining and transportation in the island of Sicily, it is only necessary to inform our readers that all the mineral from the mines is brought up from a depth of 120 feet by children from ten to fourteen years of age. The masses are carried to the surface upon their shoulders, walking or climbing up steps cut in the earth and rocks. There is no fuel in the region, and sulphur is used for melting and refining, and in its condition in these mines, it requires one ton of the sulphur to melt as large a quantity. The sulphur, when ready for market, has to be carried upon the backs of donkeys and mules to a road, and then hauled in carts thirty or forty miles to a seaport.

The cost of production of Sicily sulphur is about $15 per ton, and transportation to New York $7 per ton. With this product at $30 per ton there is realized $8 per ton upon the 300,000 tons now annually produced in Sicily. These, as well as most all sulphur deposits in the world, must have their product refined by sublimation. In fact, there is no sulphur mine whose substance does not have to be treated to prepare it for market.

Native sulphur undergoes purification by distillation in brick or stone furnaces, made very long, and furnished with retorts made of fire-clay. These retorts are attached to receivers made of the same material. The iron retorts in brick-work chambers are used, and the sulphnr is then condensed as flour of sulphur. Now it may be melted and run into rolls, and is the brimstone of commerce.

But little attention has been given to sulphur manufacture in the United States. At Clear Lake, in California, there are sulphur works which yield about 4 tons daily, or 1,460 tons annually.

The sulphur production of the world may be summed up as follows:

	TONS.
Sicily	300,000
Bologna	15,600
Papal States	400
California	1,460
Made from pyrites	240,000
Other sources	1,000
Total	555,460

This, at $30 per ton, gives $16,663,800, and it is very probable that fully *one-half* is clear profit to the manufacturer.

The treatment of vineyards with sulphur is becoming so necessary in many parts of the world that we may expect the demand to be at least 1,000,000 tons before another ten years passes away. The production can not be materially increased in Europe, either, in that time. Should a protective duty be put upon sulphur, the price could be materially lowered here, and the producer still realize large profits.

There are extensive sulphur deposits in the State of Louisiana, and of a very pure quality, but it is 446 feet below the surface, and shafts, with all the necessary cribbing, machinery, etc., would cost $120,000 to start with. This sum would be required, and the additional amount needed for the works for refining.

In the Wyoming sulphur deposits no shafts, machinery or cribbing would be required. The works for refining the sulphur can be built as cheaply, if not cheaper than elsewhere. The clay for brick, retorts and sandstone, with the coal not a half mile away for fuel, all so economically associated, that sulphur, ready for the markets of the world, can be manufactured for less than $8 per ton. The investment for refining would not exceed $15,000, and it could be done for much less money.

Another very important consideration favors the utilization of the Wyoming sulphur beds; they carry from 70 to 79 per cent. pure sulphur —more than double that of any deposit in Europe. Fuel for the refining can be placed at the works for $2 per ton. The sulphur supply is almost unlimited, and will be mined by drifting and stopping, or by tunneling. It will be economy to place the works at the mouth of the mines, with very short tracks or tramways from sulphur, coal and fire-clay to the works.—*Extracted from a Communication of a Correspondent.*

CHEMICAL ANALYSIS OF POTASH.*

BY DR. G. C. WITTSTEIN.

Potash is mostly tested for its commercial value—that is, the amount of carbonate of potassium it contains—by saturating with an acid of known strength; consequently, the assay is a very simple process, which, nevertheless, requires several precautions to make the result correct, and would be very unreliable if the potash should contain carbonate of sodium.

Often it is desirable to learn the complete composition of potash; thereby the difficulties are increased, which not every body will immediately succeed to overcome, but many will gladly accept any information gathered in relation thereto. The most frequent impurities are (including sophistications) soda, lime, magnesia, alumina, ferric oxide, manganese oxide, silica, sulphuric acid, phosphoric acid, and chlorine. These, however, never are found all associated; silica and chlorine are probably never absent from the portion soluble in water, or ferric, oxide and silica from the insoluble portion. Manganese generally manifests

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Reprint from the *Zeitschrift des Allgem. Oesterr. Apotheker-Vereines*, 1875, No. 8. Communicated by the author, and translated by P. H. Dilg.

its presence by the bluish-green tinge it gives to the potash, but it is always present in such small quantities that it can not be determined without considerable loss of material; the same holds true of the phosphoric acid.

The following treatment extends to all the above-mentioned bodies: Take 200 grams common potash, triturate to coarse powder, weigh off 1 gram and 20 grams; in the first, find the loss of water through the loss of weight by incandescence; cover the second in an evaporating dish with 100 grams of distilled water, allow to boil slowly for 10 minutes, filter, wash contents of filter until the filtrate does not give an alkaline reaction, set contents of filter aside for future experimenting (see *b*), and dilute the filtrate with sufficient water to make 200 c.c.m.

A. The part soluble in water.

(*a.*) Estimation of chlorine: 20 to 40 c.c.m. are supersaturated with nitric acid, filtered, if necessary (the turbidness arises from the silica being set free), precipitate with nitrate of silver, collect on a previously tarred filter, dry at a temperature of 100° C., weigh and calculate therefrom the chlorine. (100 parts silver chloride contain 24·74 parts chlorine.)

(*b.*) Estimation of sulphuric acid: 20 to 40 c.c.m. are supersaturated with HCl, filtered, if necessary, and precipitated with chloride of barium; calculate from the precipitate (previously exposed to incandescence) the amount of SO_3. 100 parts barium sulphate contain 34·35 parts SO_3.

(*c.*) Estimation of phosphoric acid: 50 c.c.m. are supersaturated with HCl, and filtered, if required. Then add about 1 gram chloride of ammonium and a few crystals of sulphate of magnesium, supersaturate with ammonia, stir for a few minutes, and set aside a day. If, after the expiration of that time, crystals of ammonio-magnesium phosphate have formed, collect; lixivate with ammoniacal water, dry, heat to redness, and calculate the phosphoric acid from the remaining pyrophosphate of magnesium. (100 parts of this combination are equivalent to 64 parts phosphoric acid.)

(*d.*) Estimation of the dissolved silica: 50 c.c.m. are supersaturated with HCl; evaporate to dryness, then mix with water, decant the supernatant liquid, and collect the silica on a filter; heat to redness, weigh, and bring the filtrate back to 50 c.c.m.

(*e.*) Estimation of the potassa and soda: From the lastly-named 50 c.c.m. evaporate 10 c.c.m. to dryness, weigh the saline residue, and subtract the sulphate of potassium contained therein; as it is already known (by experiment *b*) how much SO_3 is contained in 10 c.c.m. of the solution, it is only necessary to obtain the weight of the sulphate of potassium by calculating from that SO_3. The alkaline chlorides are contained in the remaining salt. Dissolve the salt again in water, precipitate with nitrate of silver, and calculate the chlorine from the chloride of silver (previously dried at 100°C.); by subtracting the chlorine from the two chlorides the weight of both metals is found.

The fourth treatment is executed in the so-called "Indirect Analysis,"* as follows: To find the weight of the potassium, multiply the weight of the two metals with 2·5416 (the quotient of the division from the equivalent of sodium into the equivalent of chloride of sodium), subtract the product from the weight of the two chlorides, and divide the remainder by 0·6355 (the difference between 2·5416 and 1·9061 [the quotient of the division from the equivalent of potassium into the equivalent of chloride of potassium.])

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* See theory of this calculation in *Frickhinger's Katechismus der Stæchiometrie.*

To find the weight of the sodium, multiply the weight of the two metals by 1·9061, subtract the weight of the two chlorides from the product and divide the remainder by 0·6355.

EXAMPLE.

		Grams.
The weight of the two chlorides is	=	0·902
" " " metals is	=	0·442

$$\text{As K} = \frac{0{\cdot}902 - (0{\cdot}442 \times 2{\cdot}5416)}{-0{\cdot}6355.} = 0{\cdot}348 \text{ grams.}$$

$$\text{Na} = \frac{(0{\cdot}442 \times 1{\cdot}9061) - 0{\cdot}902}{0{\cdot}6355} = 0{\cdot}094 \text{ grams.}$$

Sodium and potassium are next to be converted into potassa and soda after the proportions:

For KO 490 : 590 = 0·348 : X X = 0·419
" NaO 288 : 388 = 0·094 : X X = 0·127

B. The part insoluble in water.

(*a.*) Estimation of the insoluble silica: Cover that part of potash which was not dissolved by the water in a retort with HCl (sp. gr. 1·12), any effervescence thereby caused indicates carbonate of calcium, or of magnesium, or of both. Digest for a few hours, filter, wash contents of the filter, heat to redness, weigh and add it to the silica obtained by A, d.

MEMORANDUM.—The insoluble part of silica possibly might contain a silicate; to determine this, it must be decomposed by an alkaline carbonate.

(*b.*) Estimation of alumina and ferric oxide: Precipitate the nitric acid solution with ammonia, treat the lixivated precipitate with hot liquor potassæ, whereby the ferric oxide precipitates, leaving the aluminium oxide in solution, which is then precipitated with ammonia from the potassa solution (previously saturated with HCl). After heating and weighing the ferric oxide, it is tested for manganese, by melting on platinum with soda, which acquires a green color if manganese be present.

Determining Lime and Magnesia: Precipitate the lime with oxalate of ammonium and the magnesia with phosphate of sodium, from the filtrate remaining after precipitating the aluminium and ferric oxides.

Lastly, all the obtained weights are brought up to 100 grams potash in such a manner that silica, alumina, ferric and manganese oxides are calculated as such; lime and magnesia as carbonates, soda and potassa as phosphates, sulphates and chlorides and the rest as carbonates. If the potash was found to contain soda, then this alkali is dealt first as to the phosphoric acid (as $3NaO+PO_5$), then sulphuric acid and chlorine, and only if insufficient for these, the potassa is used in calculation.

Possibly potash might contain the following constituents:

Carbonates of potassium, sodium, calcium and magnesium, chlorides of potassium and sodium, phosphates of potassium or sodium, sulphates of potassium and sodium, oxides of iron, manganese and aluminium, besides water and silica.—*American Journal of Pharmacy.*

ON REMOVING GREASE SPOTS AND STAINS FROM CLOTHING, DRESSES AND FABRICS.

The stains and spots on clothing, dresses and fabrics, which the dyer or scourer is called upon to remove, are of so different nature, and caused by so various substances, that the operator, having no wide practical experience, or a theoretical knowledge of applied chemistry, is often at a loss how to proceed. I intend to give in this article, in as condensed form as possible, a systematic method, hoping that it will be interesting, and of benefit to some of the readers of this paper.

Only a very few stains can be removed by the application of water, either cold or warm. We read in the history of the ancient nations who had no knowledge of making soap, that they resorted to some other means, such as the leaf and stalks of a certain soda plant, the alkaline and clayey earths, such as marl, wood ashes and putrified urine. It must have been observed by our progenitors that by the action of rain and sunshine colored fabrics lost continually of their shade, and the art of bleaching has probably originated in this manner, as all primitive arts have a resemblance to nature's own proceedings. The fabrics were spread out on the green sod, moistened with water, and exposed to the sunshine for weeks.

After the birth of chemistry, about a century ago, Hellot first applied the principles of this science, that has benefited mankind without a parallel, to the art of dyeing; and others, as Macquer, D'Appligny, Bancroft, Henry, Bergmann, Porsner, and many others that deserve to be mentioned, threw still more light on the once obscure ground of technical chemistry. This progress and enlarged knowledge in the application of old, as well as the discovery of new chemicals, opened a wider field to the special art of scouring and removing spots. Two Frenchmen, Chaptal and Baume, must be considered as having performed meritorious work in this branch. Chaptal, in his writings, points out rightly, that it requires a better knowledge of the art of chemistry than the art of dyeing itself; and his treatise is written with so much clearness and decision, that we are justified in taking some generalizations from it, giving them in a modified form.

All stains that are met with on fabrics can be divided into two classes. The substances causing the first only cover and adhere to the texture and fibres, and do not modify the colors, and after removal leave the fabric in its original condition. The second class are those caused by substances acting chemically or tinctorially on the fibres or their colors, and can only be removed by chemical agents that combine with or destroy the substance forming the stain.

In the first class we find spots from such substances as grease, varnish, oil, colors, wax, and all fatty and resinous substances; and others, such as blood, the juices of fruits and plants, can be classed in it if found on a white or colorless fabric.

The agents that serve to remove these stains are those that either combine chemically, and hence decompose the fatty substance, which can then be washed out with water, or those that act as solvents on fat and need only be applied as a wash.

Amongst the former we find the alkalies, alkaline earths, the soaps, some animal substances, such as the yolk of eggs, ox-gall, which latter may be considered an animal soap; and some that act as absorbents of grease, as fuller's earth, plaster of Paris, chalk, clay, and blotting paper. The alkalies are never applied in their caustic state, though they have then the greatest affinity for fats, for they destroy nearly all colors, and injure the animal fibres if very concentrated. They are applied as carbonates, or when combined with the oleic and stearic acids of fats, known then as soaps, which have the property of dissolving an additional part of grease, forming an emulsion that is soluble, and can be washed away by water. These agents can be applied to all fabrics having none or only fast colors, and need no further comment, as their application is practicable in every household; but if they are applied to fabrics dyed with fugitive dye-stuffs, the color will be modified or entirely destroyed, and can not be easily replaced again. These can be treated by the application of either the absorbents, or the second class, the solvents of grease. The absorbents can be applied as fine powder or as paste; but they must remain in contact with the spot for a considerable time—sometimes for days. If the fabric be thick they should be applied to both sides; for the spot will appear again if not thoroughly removed. The absorption can be facilitated by the application of heat, if the spot is quite fresh. From a smooth thin fabric it can be frequently removed by placing it between blotting paper and applying a hot iron; but if one attempts to remove such a spot by this means from a thick fabric, or velvet, or felt, it will only make it worse by pressing down the fibres and enlarging the spot. Ox-gall, when fresh, in connection with alkalies and alkaline earths, readily removes grease spots, but the bile is of a disagreeable odor and subject to putrefaction. A preparation once much in use, can be prepared by adding to 1 quart of bile 1½ ozs. alum, boiling for five minutes; then add 1 oz. common salt, and preserve in a tightly closed bottle, decanting it from the precipitate that will form after standing some time. It is not liable to putrefaction, and can be perfumed with any essential oil. Another way is to combine it with soap and alkaline earths, so as to make a thick paste that can be dried, and is powdered when required for use. The ox-gall must be well purified. The alkalies make it more fluid and transparent, and must be used with judgment. The simplest method is to melt equal parts of ox-gall and white soap together, on a low fire, evaporating the water as much as possible; then cast in moulds to suit.

All these methods are, however, superseded by the application of the second class of agents, the solvents of grease and its allies. These are the essential oils in combination with alcohol, spirits of turpentine, solutions of soap or camphor in alcohol; a still more powerful agent is common ether, and last, but not least, benzine. The essential oils, and the alcoholic solution of camphor, are only slightly soluble in water, and if the latter has been used the spot must first be rinsed with alcohol, as the camphor will precipitate in contact with the water. Spirits of turpentine, if kept over caustic lime and diluted with alcohol, will readily remove grease spots or those of varnish. Ether, if freshly prepared, is soluble in about ten times its weight of water, and miscible in all proportions with alcohol; it dissolves grease and resinous substances, the essential oils, and most of the fixed oils. It is of a very volatile nature, and if not applied profusely will leave a margin on the fabric. The agent of this class that is of more recent date, and perhaps the most widely applied at present, is benzine. There exists establishments in the old country that are only devoted to this special branch, the so-called "chemical washing." In a German industrial paper before me, I read some remarks on the details of that branch, which deserve to be reproduced here. Though in general the belief prevails that by washing with benzine all colors are saved, yet some parties have come to loss by washing different colored goods together, from the running of the colors and consequent soiling of the lighter shades. Though this accident is not frequent, yet it generally occurs just on the most valuable and dearest silks, having delicate fancy colors. Blue washes out most on silk, but also all blue checked goods on half cotton or woolen stuffs. Lilacs and violets on half woolen or cotton goods part with a good deal of aniline that adheres to the fibres. On all woolen goods it happens more rarely.—*Continued.—F. C. in the Industrial Record.*

POISONING BY ARSENICAL WALL PAPER—NOT GREEN.

BY CHARLES A. CAMERON, M. D.,

Fellow and Professor of Chemistry, Royal College of Surgeons, Ireland.

Cases of arsenical poisoning occasioned by living in rooms the walls of which were covered with paper colored green by arsenite of copper have frequently been recorded. Lately a case of arsenical poisoning has come under my notice, caused by inhaling the dust from paper not colored green. The family of a gentleman, Mr. Jones, residing in New Ross, suffered so severely from symptoms usually produced by arsenic that he was induced to get the wall-paper of his house examined. Out of seven kinds of paper, six were found to contain arsenic. No. 1, an olive-green paper, with deep green flowers and gold-like lines, contained an immense amount of arsenic in the two green colors and the "gold." No. 2, a faint lavender-watered paper, contained arsenic in large amount. No. 3, a white paper with green flower, contained a very large amount of arsenic. No. 4, a paper with red and green flowers on a gray ground, was highly arsenical. No. 5, a dark olive-colored paper, with gilding, did not contain much arsenic. No. 6, a pale green and white paper, also contained only a small amount of arsenic—much less than was put on the lavender paper. Mr. Jones' family had not suffered from symptoms of arsenical poisoning until shortly after the house was papered with the above; and the symptoms disappeared shortly after they left the house preparatory to the removal of the paper.—*The Medical Press and Circular.*

COMPARATIVE STRENGTH OF OFFICINAL PREPARATIONS OF THE UNITED STATES AND GERMAN PHARMACOPŒIAS.

Some months ago the German Apothecaries Association of the city of New York appointed a committee to collate and compare the strength of officinal preparations which bear the same name or are nearly identical in composition in the Pharmacopœia of this country and of Germany. Recently this committee made their report, which was afterwards printed by the Society.

It is only necessary to add, that there is at times confusion arising from the similarity of names as written by physicians, and that the Association state that they adhere to the rule to dispense the preparations of the U. S. Pharmacopœia unless the German is designated.

Attention is called to the columns which designate the percentage strength of the active ingredient in the several preparations. The percentage is given in *weight.*

Those preparations to which a * is affixed, differ in their composition from similar named preparations in other Pharmacopœias.

PREPARATIONS OF THE GERMAN PHARMACOPŒIA.			PREPARATIONS OF THE UNITED STATES PHARMACOPŒIA.		
	Sp. Grav.	Per ct.	Per ct.		Sp. Grav.
Acidum Aceticum (glaciale)		100	36	Acidum Aceticum (Acid acetic dil. Ph. G.)	1.047
" " dil.	1.040	30	5	" Aceticum dil Acet. destill. Ph. G.	
" Chloronitrosum (Prepared extemporaneously).				" Nitromuriaticum (Proportions different).	
" Hydrochloricum	1.124	25	33	" Muriaticum	1.160
" " dil.	1.060	12½	8	" " dil	1.036
" Nitricum	1.185	30	75	" Nitricum	1.420
" " dil.	1.086	15	12⅛	" " dil	1.068
" Phosphoricum	1.120	20	10½	" Phosphoricum dil	1.056
"			100	" Phosphoric. Glaciale	
" Sulfuricum dil	1.113	16½	12½	" Sulphuric dil	1.082
				Æther	0.750
Æther	0.728			" Fortior	0.728
Alumen (Potash alum)				*Alumen (Ammonia Alum)	
				Aluminis et Potassii sulph (Alumen Ph. G.)	
Alumen ustum (From potash alum).				*Alumen exsiccatum (From ammonia alum).	
Antidotum Arsenici (Prepared extemporaneously from liq. ferri oxyd. sulfur and magnes. usta).				Ferri oxid hydratum (From liq. ferri tersulph. and ammonia).	
Aq. Amydgal. Amara Distilled from bitter almonds. 20 gr.= 1 gr. ac. hydrocyanic dil. U. S. P.		$\frac{1}{10}$	$\frac{1}{100}$	Aq. Amygdal amara (Solution of 8 drops of ess. oil almonds in 2 fl. ozs. water).	
Aq. Cinnamomi (Distilled from the bark).				Aq. Cinnamomi (Solution of the oil in water).	
Aq. Picis		10	25	Infusum Picis	
				Carbo animalis	
Carbo animalis (Made from bone and meat).				" " purific	
Collodium Cantharidale		82	50	Collodium cum Cantharide	

PREPARATIONS OF THE GERMAN PHARMACOPŒIA.	Sp. Grav.	Per ct.	Per ct.	PREPARATIONS OF THE UNITED STATES PHARMACOPŒIA.	Sp. Grav.
DECOCTA, (1 part drug in 10)				DECOCTA. (These have generally 1 part of drug in 16; but two, however, have 1 part of drug in 32).	
" Concentrat (1½ part drug in 10).					
" Concentratissimum (2 parts drug in 10).					
Electuarium e Senna (Senna)		13	8	Confectio Senna (Composition differs).	
" Theriaca (opium)		1	3	" Opii (Composition differs).	
Elixir proprietatis Paracelisi (Saffron and sulphuric acid).				*Tinct. Aloes et Myrrhæ (Composition differs, elixir pro.)	
Emplastrum Belladonnæ (Powd. herb).		25	100	*Emp. Belladonnæ (Alcoholic extract of the root with plaster).	
" Cantharidum		25	33	Ceratum Cantharides	
" Hydrargyri		30	50	Empl. Hydrargyri	
" Opii (powd. opii)		4½	6½	" Opii	
Emulsio Amygdal comp. (Almonds and Hyoscyamus seed with Magnesia).				Mistura Amygdalæ (Composition differs).	
EXTRACTA. (Narcotic extracts are prepared from the inspissated juice of the leaves and twigs treated with alcohol). (Extract sicca contain 50 per cent. of extract).				EXTRACTA. (Narcotic extracts prepared by inspissating juice of the fresh leaves).	
Ext. Belladonnæ, Chelidonii, Conii				Ext. Belladonnæ, Hyoscyami Conii (Prepared from the dried herb).	
Digitalis, Gratiolæ, Hyoscyami				Ext. Aconiti, Belladonnæ alch. Conii alcohol, Digitalis	
Lactucæ, Virosæ, Pulsatilla, and Stramonii				Hyoscyami alcohol Stramonii alcohol	
Extract Aconiti (from the tops)				Ext. Aconiti (from dried herb)	
" Aloes (aquosa)				" Aloes purificata (Alcoholic extract).	
* " Chinæ fuscæ (Contains no quinia).				" Cinchonæ (From cinchon flava).	
* " Colocynth comp.				" Colocynth. co. (Composition differs).	
* " Cubebarum (With alcohol and ether).				" Oleoresina Cubeba (Ethereal).	
" Juglandis (From the leaves).				" Juglandis (From bark of the root).	
" Strychni Aquosum				" Nucis Vomica (With 90 per cent. alcohol).	
" " Spirituosum. (With 70 per cent. alcohol).					
* " Taraxaci (From the whole dried plant).				" Taraxaci (From juice of fresh root).	
Ferrum chloratum (Ferrous chloride).					
" Sesquichloratum (Ferric chloride.)				Ferri Chloridum	
Liquor Ammonii acetici (Spir. Mindereri).		15	7½	Liquor Ammonii acetatis (Spir. Mindereri).	
" Ammonii caustici	0.960	10	10	Aqua Ammonii	0.960
			26	" " fortior	0.900
" Ferri chlorati (Ferrous chloride.)	1.230	23			
" " Sesquichlorati	1.480	43½	33	Liq. Ferri Chloridi	1.335
" " Sulfurici oxydati.	1.310	8	8	" " tersulphatis	1.320

PREPARATIONS OF THE GERMAN PHARMACOPŒIA.	Sp. Grav.	Per ct.	Per ct.	PREPARATIONS OF THE UNITED STATES PHARMACOPŒIA.	Sp. Grav.
			16	Liq. Ferri subsulphatis (Monsel's solution).	1.552
Liquor Hydrargyri nitrici oxydulati		10	33	Liq. Hydrargyri Nitratis	
*Liquor Kali arsenicosi		$1\frac{1}{10}$	$1\frac{1}{10}$	Liq. Potassii arsenitis (Contains spirits lavender compound).	
" " caustici	1.330	33	6	" Potassii	1.065
" Natri caustici	1.330	30	5½	" Sodæ	
Oleum Camphoratum		10	25	Linimentum Camphoræ	
" Cinnamomi (Oil of cassia).				Ol. Cinnamomi (Oil Ceylon cinnamon).	
" Myristicæ (The fatty oil).				" Myristicæ (The essential oil).	
*Potio Riveri (Citric acid and carbonate soda).				Mistura Potassii Citratis (Neutral mixture—lemon juice and bicarb. potass.)	
Pulv. Magnesia cum Rheo				Pulv. Rhei Comp (Composition different and much stronger).	
*Resina Scammonii (Prepared from the root with alcohol).				Scammonium (The natural exudation).	
		By vol.	By vol.		
Spiritus	0.830	90	89	Alcohol	0.835
			95	" Fortior	0.817
" Dilutum	0.892	70	45	" Dilutum	0.941
" Ætheris (Hoffman's drops).				Sp. Ætheris comp (Composition differs).	
" Nitrosi				" " Nitrosi (One-half the strength of the Ph. G.)	
*Syrupus Ferri Iodidi		5	8¼	Syr. Ferri Iodidi	
* " Ipecacuanhæ		1	6	" Ipecacuanhæ	
" Rhei (Carb. potass. and cassia).		5	10	" Rhei (from fluid extract).	
" Rubi Idæi (From the juice of raspberries).				" Rubi (From the bark of blackberry roots).	
" Senegæ		4	16	" Senegæ	
Parts of drug to menstruum.	Per ct. of alcohol by volume.			Drug to menstruum.	Per ct. of alcohol by volume.
1–9 Tinct. Aconiti (radicis) (The tincture of the leaves is omitted in both pharmacopœias).	70	10	47½	12 in 32 Tinct. Aconiti Rad	90
1–4 Tinct. Aloes	90	20	3	1–32 * " Aloes	22
* " Aloes comp				" Aloes et Myrrhæ (Composition differs).	90
" Aromatica acida (Acid sulfur.)		4	20½	Acid. Sulphuric Aromatic (Composition differs).	
* " Belladonnæ (With juice of fresh plant)			14	4–32 Tinct. Belladonnæ (With dried leaf).	45
1–9 " Arnicæ	90	10	22	6–32 " Arnicæ	90
1–9 * " Cantharidum	90	10	3	1–32 " Cantharidis	45
1–9 " Capsici	90	10	3	1–32 " Capisci	45
1–4 " Catechu	70	20	10½	3–32 " Catechu	45
1–4 " China, China fusca	70	20	22	5–32 " Cinchonæ (Cinch. flav.)	68
" " comp				* " Cinchonæ comp. (Composition differs).	
1–4 " Cinnamomi	70	20	11	3–32 " Cinnamomi	60

PREPARATIONS OF THE GERMAN PHARMACOPŒIA.				PREPARATIONS OF THE UNITED STATES PHARMACOPŒIA.			
Parts of drug to menstruum.		Per ct. of alcohol by volume.	By vol.	By vol.	Drug to menstruum.		Per ct. of alcohol by volume.
*	Tinct. Digitalis (From juice of the fresh plant).			14	4–32	Tinct. Digitalis (From dried leaf).	45
1–9	“ Ferri chlorati	63	10	9		“ Ferri chloridi	68
1–4	“ Gentianæ	70	20	7	2–32	“ Gentianæ comp. (Composition differs).	45
1–4	“ Gallarum	70	20	14	4–32	“ Gallæ	45
1–9*	“ Hellebori virid.	70	10	63	16–32	“ Veratri Virid.	90
1–9	“ Jalapæ resinæ	90	10	22	6–32	“ Jalapæ (root)	60
1–9	“ Iodi	90	10	7	1–16	“ Iodinii	90
1–4	“ Kino	90	20	11	3–32	“ Kino	60
1–4	“ Myrrhæ			12	3–32	“ Myrrhæ	90
1–200	“ Opii Benzoica,	70	½	$\frac{4}{10}$	1–240	“ Opii Camphorata	45
1–9½	“ “ Crocata (wine)		10	$6\frac{1}{5}$	1–16	Vinum Opii (Without saffron).	
1–9½	“ “ Simplex (1 dram=6 gr. opium).		10	8¾	5–64	Tinct. Opii (1 dram = 5 grains opium).	45
1–9	“ Rhatanæ	70	10	21	6–32	“ Krameriæ	45
1–9	“ Stramonii sem.	70	10	14	4–32	“ Stramonii	45
1–9	“ Strychni	70	10	31½	8–32	“ Nucis Vomicæ	90
1–4	“ Valerianæ	70	10	14	4–32	“ Valerianæ	45
	Trochisci Ipecacuanhæ (1-12 gr. in each, two kinds).					Trochisci Ipecacuanhæ (¼ gr. in each).	
	“ Santonin (⅜, ⅔ and ¾ gr. in each).					“ Santonini (½ gr. in each).	
	Unguent Cantharidum		16	12		Unguentum Cantharidi (Composition differs).	
	“ Cereum (yellow)					Unguentum (yellow) “ Ceratum (white)	
	“ Cerussæ		33	12		“ Plumbi carbonatis	
	“ Hydrargyri ciner.		33	50		“ Hydrargyri	
	“ Mezerei (extract)		10	2½		“ Mezerei (Made with 25 per cent. fluid extract =2½ per cent. extract, Ph. G.)	
*	“ Plumbi (yellow)					Cerat. Plumbi Subac. (white).	
*	“ Sabinæ (extract)		10	5		“ Sabinæ (Composition differs; made with 25 per cent. fluid extract = 5 per cent. extract, Ph. G.)	
	“ Zinci (With ung. rosæ).		10	16⅔		*Unguentum Zinci Oxidi (Made with benzoated ointment).	
	*Vinum Ipecacuanhæ		10	6¼		Vinum Ipecacuanhæ	

—*Druggists' Circular.*

INDIGO.—This valuable and very important dye is obtained chiefly from *Indigofera tinctoria*, Linn., which is cultivated in Bengal, Malabar, Madagascar, St. Domingo, and other places. A superior kind, imported from America and the East Indies, is obtained from *Indigofera disperma*, Linn.

The dye is separated by a complicated process of maceration and steeping, and is used almost universally for dyeing cloths, cotton, silk, etc.; and, when mixed with starch, it forms the 'blue' commonly used by laundresses. The chief varieties of commerce are, Bengal, Oude, Madras, Caraccas, etc.

NOTE ON THE SOLUBILITY OF OIL OF BITTER ALMONDS IN WATER.*

BY F. A. FLUECKIGER.

In most chemical handbooks it is stated that one part of oil of bitter almonds can be dissolved in thirty parts of water. The author finds this not to be correct either for the ordinary oil containing prussic acid or the oil which contains none. Neither is it the case with oil (also free from prussic acid) which has been separated from the crystalline bisulphite combination ($2\ (C_7H_6O,\ NaHSO_3)+OH_2$) by means of carbonate of sodium in a current of carbolic acid, in order to remove any benzoic acid it might contain. The oil drops first begin to disappear with 250 times their weight of water, *i.e.*, they divide up very finely in the water, and impart to it a turbid appearance. With 300 parts of water the mixture becomes clearer, but even with much more water it is not completely clear. The exact disappearance of the turbidity is not very easy to note, as it only takes place very gradually. In practice, the solubility is yet further influenced by the formation of benzoic acid and hydrobenzamide, which are both less soluble in cold water.

The solubility of the oil in water does not appear to be much increased by heat. A turbid solution, containing 1 part in 300, does not become clear in a water-bath.

These experiments induce the author to think that the statement that 1 part of oil of bitter almonds is soluble in thirty parts of water may have had its origin in a printer's error, and that probably it should have been 1 in 300. At any rate the latter is nearer the truth.—*London Pharm. Journal.*

SHERRY WINE.

BY J. B. FRANCIS.

Spain has been for all historical times one of the most important wine producing countries of the globe. The mountains, which follow the course of its numerous rivers, offer the most favorable situations and fertile soils for the culture of the vine; its southern position insures a sufficient amount of sunshine to fully mature the grapes and bring them every year to their highest state of perfection, while the proximity of the Atlantic ocean on the one hand, and the Mediterranean on the other, brings the natural moisture necessary to the best development of the fruit.

It is in the preparation of white, dry wines, such as sherries, that the Spanish excel all other nations, and the export trade in these products, which is carried on to most parts of the world, is, perhaps, the most notable source of wealth to the inhabitants of the Peninsula.

True Sherry Wines are the products of the district of Cadiz—the most important maritime town of Spain, situated on the bay which bears its name, in the province Andalusia. Thirty miles by rail from Cadiz, on the road to Seville, the capital of the province, lies the town of Xeres de la Frontera, around which the principal vineyards are situated. A horse car, a novelty in Spain, takes the traveler from the station to the town, the population of which is about 40,000.

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* *Archiv. der Pharmacie*, vol. ii., 10.

Xeres, or Jerez, has the same connection with sherry wine that Bordeaux has with claret, or Rheims with champagne; in fact a closer one, as it is not only the place where the wine is produced, but even the name is derived from the town; the English having first changed Xeres, the Spanish name for the wine, into Sherris, and finally into Sherry.

The vineyards lie between the rivers Guadalquivir and Guadalette, in a triangular space, measuring about twelve miles on a side.

The actual number of acres devoted to the culture of the vine in the district of Cadiz is about 25,000, while the annual production of wine is about 50,000 butts of 106 imperial gallons each.

The vineyards are principally on slopes and declivities, and in those vineyards producing the best wine, contain a soil composed of the carbonates of lime and magnesia, mixed with clay.

The grapes, which are white, are left to hang in the sun till they begin to shrivel, when they are gathered and carefully sorted for the better wines. The fruit, dusted over with plaster of paris, is placed upon large wooden platforms, where it is trodden on by men; the juice which runs from the grapes is by some producers kept separate, but by others it is mixed with that obtained by the use of the press after the treading. The juice is filled into butts, and these are transferred to the *bodega* or storehouse.

Here during the months of December, January and February, the must ferments. After the first fermentation is over, the liquor is racked from the lees, and each butt of new wine receives an addition of spirit, varying according to the wine, from six to ten gallons.

The common sorts are clarified and mixed with further quantities of spirit, so as to be in a condition for export eighteen months after the vintage; but the better sorts remain in the casks for two or three years before their sale can be contemplated.

When the wine is about to be exported, a small quantity of very fine old wine or *solera* is mixed with it, which increases the desired sherry flavor.

The ordinary wines contain a considerable amount of albuminous matter which disposes them to spoil, and therefore, in the absence of a more desirable preservative agent, a sufficient amount of brandy is added to stop all change; but it is impossible to say how much of the alcohol of any particular sherry is natural, and how much is artificial.

The best natural sherries, however, never contain more than about 12 per cent. of absolute alcohol, while inferior varieties contain as small an amount as 8 or 9 per cent., and frequently even less. Sherry, as sold in our market, contains from 17 to 23 per cent. of alcohol, so that the addition of brandy, or "fortifying," as it is called, is seen to be very considerable.

All sherry wine is by nature of a pale color; the darker shades, or brown sherry, are produced by age, or the addition of *vino de color*, or boiled wine.

Good sherry wine is very scarce; at the present time it is necessary to pay $300 per butt of 106 gallons, on the spot where the wine is produced; inferior grades can of course be obtained at much lower rates, the common, ordinary wine of the country, costing only about twelve cents per bottle.

Sherry wines have one great advantage, which is, if they are of the best quality, that the older they get the better they are; but it is an error to keep low-priced wines in the expectation of their becoming good after a time; very generally the reverse is the case, and they turn out fit for nothing.

The choicest variety of sherry, and of course the highest in price, is the famous Amontillado; but the supply is not equal to the demand, nor can it be increased, as a soil similar to the little calcareous tract at Jerez, possessing like advantages of climate, is unknown.

But in other places where the real vinous basis can not be obtained, the chances of profit have lured many into the dishonest practice of adulteration. Even Cadiz has earned an unenviable notoriety, by dishonest shippers lending themselves to the frauds of London wine merchants, who, according to a recent wine circular, obtained the cheapest liquid trash they could find, to make a counterfeit, which they shipped to Cadiz, to be brought back as genuine sherry, with a bill of lading dated from that Spanish port.—*The Laboratory.*

TO MAKE GOLD AND SILVER INKS.

BY C. H. VIEDT.

Good bright gold, silver and bronze inks are seldom met in the market; they are almost always of a dull color, do not flow easily from the pen, and the writing remains sticky. Hence, architects and artists mostly prefer to use shell gold and shell silver (*Muschel-silber*), instead of the corresponding ink. The latter, however, is so much easier and safer to use, that I will describe its preparation.

For gold ink, it is best to employ genuine gold leaf, but owing to the expense, this is seldom used; sometimes mosaic gold (sulphide of tin) or iodide of lead is employed, but almost always Dutch leaf.

Owing to the relatively low price of silver, genuine silver foil is used for silver ink; false silver foil is seldom used, and is not so good. For other metallic inks, commercial bronze powders are employed. The genuine and false foils are also sold in a finely pulverized state; they are made from the waste of the goldbeaters, by rubbing it, in metallic seives, to an impalpable powder.

In consequence of the beating between goldbeaters' skin, it has particles of grease and other impurities attached to it which must be removed before it can be used for ink. For this purpose the whole sheets, or the commercial bronze powder, are triturated with a little honey to a thin magma on a glass or porphyry plate with a pestle, as carefully as possible, as the beauty of the ink depends essentially on this. The finely rubbed paste is rinsed into a thin glass beaker, boiled for a long time with water containing a little alkali, frequently stirred, decanted, well washed with hot water, and dried at a gentle heat. By boiling this powder with water containing sulphuric, nitric, or hydrochloric acid, different shades can be imparted to it.

Next, a solution of 1 part of white gum arabic in 4 parts of distilled water is mixed with one part of potash water glass, and triturated with the requisite quantity of purified metallic powder. Gold ink will bear more liquid than silver ink, since gold covers much better; on rough paper more metal is necessary than on sized paper; on light paper more than on dark, to make the color of the ink appear equally intense.

In general, 1 part of foil is enough for 3 or 4 parts of the above liquid. In preparing large quantities of ink, a low porcelain measure is used for transferring it to the small glass vessels where it is to be kept, and it must be continually and thoroughly stirred, so that it will always keep well mixed. It requires frequent stirring also when in use. It is best to mix the dry powder with the liquid immediately before using. The ink can be used with a common steel pen, and flows very well when writing slowly, but it is better to use a pencil.

I consider the use of potash water glass of great importance. It greatly increases the metallic lustre on paper, prevents its looking dead, protects the writing from being discolored by the action of the atmosphere, and also prevents it from penetrating too far into the pores of the paper, without rendering it very viscid. Although the writing of itself possesses a high metallic lustre, it may be increased by gently polishing with a polishing steel. Inks made with mosaic gold, mosaic silver, iodide of lead, etc., are not nearly so beautiful.—*The American Chemist.*

COMBINATIONS OF GLACIAL ACETIC ACID WITH OILS.

BY J. B. BARNES.

In my paper on "The Solubility of Alkaloids in Oil," it is stated that glacial acetic acid mixes with "fixed and essential oils in all proportions." Although this is true in a large number of cases, it is not so in all, and lest some readers of the *Journal* might infer that my statement applies to all oils, I beg leave to submit the following, showing the result of experiments made to ascertain the exact proportions in which a considerable number unite with glacial acetic acid.

The ***minimum*** combining proportions of the following five commercial samples of oil I find to be:

Almond oil..............	7 vol.
Glacial acetic acid......	1 "
Olive oil.................	8 "
Glacial acetic acid......	1 "
Cod liver oil............	7 "
Glacial acetic acid......	1 "
Linseed oil..............	7 "
Glacial acetic acid......	1 "
Oil of rhodium..........	4 "
Glacial acetic acid......	1 "

In this series the oils appear to dissolve the acid.

The *maximum* combining proportions of the next five are:

Oil of turpentine.......	1 vol.
Glacial acetic acid......	2 "
Oil of lemon............	2 "
Glacial acetic acid......	1 "
Oil of lemon grass......	2 "
Glacial acetic acid......	1 "
Oil of copaiba...........	1 "
Glacial acetic acid......	20 "
Oil of juniper............	1 "
Glacial acetic acid......	1 "

Hence the order is reversed, the acid dissolves the oils.

The following is a list of forty-one oils that will mix with glacial acetic acid in all proportions: Castor, croton, cloves, caraway, rosemary, sandal, cajeput, orange, burgamot, anise, essential oil of almonds, origanum, chamomile, eucalyptus, sage, cinnamon, cassia, lavender, myrtle, marjoram, pennyroyal, citronella, pimento, sassafras, calamus, spearmint, wormwood, neroli, cubebs, coriander, cumin, peppermint, geranium, male fern, citron, fennel, rue, savin, amber, nutmeg, and essential oil of mustard.—*London Pharm. Journal.*

A PROFITABLE SOURCE OF PICRIC ACID.

Dr. G. C. Wittstein calls attention to a new source of picric acid. This is a long and well known drug, the resin of *xannthorrhœa arborea*, a plant which is a native of Australia. It is known as acaroid resin and as the yellow resin of Botany Bay in New Holland (*resina acaroidis* and *resina lutea Novi Belgii*). The advantages of using this substance for the manufacture of picric acid are two fold. First, the material is cheap; second, the yield is large. About one hundred and fifty grains of the pulverized resin were placed in a beaker glass, and 750 grains of crude nitric acid, of specific gravity 1·16, poured over it; the beaker was covered with a glass capsule and digested at a gentle heat. The mass soon swelled up, and a deep brown crust formed over the liquid. This crust needed to be broken up from time to time with a glass rod. After about three hours nitrous fumes ceased to be evolved, and the mass was allowed to cool. The next day he found the bottom of the beaker covered with a thick layer of yellow crystals. Above this was a brownish red tarry mass, which hung together in a lump. This was taken out and again digested with 375 grains nitric acid; but there was almost no action, at least no more nitrous acid was formed, and no crystals were deposited from this second liquid on cooling, showing that it is unnecessary to treat the resinous mass with nitric acid a second time. In the present case it was desirable to lose as little as possible of the product sought; hence, after the crystals that formed had been taken out, the second liquid was added to the mother liquor and evaporated to dryness. The first crystals were added and the adhering nitric acid driven off at 212 Fah. The total residue weighed 100 grains, almost ⅔ of the resin taken; it was yellow and crystalline, and contained nothing amorphous but single crystals of oxalic acid. The picric acid thus obtained, after recrystallizing to secure the oxalic acid, weighed 75 grains. Hence, the yield is 50 per cent. of the crude material.

PRICES OF METALS.

The prices of many of the dearest may be considered also as "fancy prices," and actually a whole pound of some of the metals named could hardly be obtained at even the extravagant figures annexed. In compiling the following table we have taken the prices of the rarer metals from Trommsdorff's and Schuchardt's last price lists; we have assumed the avoirdupois pound as equal to 453 grammes, and the mark as equal to 24 cents gold.

An inspection of the table is not without interest; it is evident that the prices of the metals bear no relation to the rarity of the bodies whence they may be derived, for calcium, the third in the list, is one of the most abundant elements. Even that excessively sparingly distributed metal, indium, the most recently discovered element, stands tenth in the list, below strontium. The metals of the alkalies seem to occupy a remarkably low place in the table.

Metal.		Value in gold per lb. avoirdupois.
Vanadium,	cryst, fused,	$4,792.40
Rubidium,	wire,	3,261.60
Calcium,	electrolytic,	2,446.20
Tantalum,	pure,	2,446.20
Cerium,	fused globules,	2,446.20
Lithium,	globules,	2,228.76
Lithium,	wire,	2,935.44
Erbium,	fused,	1,671.57
Didymium,	fused,	1,630.08
Strontium,	electrolytic,	1,576.44
Indium,	pure,	1,522.08
Ruthenium,		1,304.64
Columbium,	fused,	1,215.28
Rhodium,		1,032.84
Barium,	electrolytic,	924.12
Thallium,		738.39
Osmium,		652.32
Palladium,		498.30
Iridium,		466.59
Uranium,		434.88
Gold,		297.72
Titanium,	fused,	239.80
Tellurium,	fused,	$ 196.20
Chromium,	fused,	196.20
Platinum,	fused,	122.31
Manganese,	fused,	108.72
Molybdenum,		54.34
Magnesium,	wire and tape,	45.30
Potassium,	globules,	22.65
Silver,		18.60
Aluminium,	bar,	16.30
Cobalt,	cubes,	12.68
Nickel,	cubes,	3.80
Cadmium,		3.26
Sodium,		1.26
Bismuth,	crude,	1.95
Mercury,		1.00
Antimony,		.36
Tin,	recent quotations,	.25
Copper,	" "	.22
Arsenic,	" "	.15
Zinc,	" "	.10
Lead,	" "	.06
Iron,	" "	.01½

—*American Chemist.*

A cement, impermeable by air and steam, and especially well adapted to use for steam or gas pipes, is made of powdered graphite 6 parts, slaked lime 3 parts, sulphate of lime 8 parts, and boiled oil 7 parts, well kneaded.

TRANSACTIONS OF PHARMACAL COLLEGES AND SOCIETIES.

CHICAGO COLLEGE OF PHARMACY—ABSTRACT OF THE MINUTES.

The semi-annual meeting of the Chicago College of Pharmacy was held on Wednesday, September 15, at 3 P. M., President Mill in the chair.

The minutes of the last annual meeting, and of all trustees' meetings since, were read by the Secretary, and, on motion, approved.

The amendment to the constitution and by-laws, presented at the annual meeting, was put to vote, and unanimously adopted, as follows:

CONSTITUTION—ART. 4. Strike out "second Wednesday in March," and insert "*first Wednesday in April.*"

BY-LAWS.—LAW I.—SEC. 3. Strike out "March," and insert "*April.*"

LAW II.—SEC. 7. Strike out "March," and insert "*April.*"

LAW III.—SEC. 1. Strike out "March and September," and insert "*April and October.*"

On motion, the following committee was appointed to make effort to increase the membership of the college: Messrs. C. W. Grassley, Henry Biroth and Adolf G. Vogeler.

On motion, a committee was appointed to consider the subject of a new certificate of membership, to report at the next annual meeting.

On motion, adjourned.

A meeting of the Board of Trustees of the Chicago College of Pharmacy was held on Wednesday, September 15, at the close of the meeting of the college.

President Mill in the chair.

On motion of Mr. Patterson, the Professor of Chemistry was allowed to purchase certain additional apparatus necessary.

On proceeding to a ballot for applicants for membership, Mr. Wilson was appointed teller, and on canvassing the votes it was announced that Prof. H. D. Garrison was unanimously elected a member of the college.

The application of C. H. Plautz was referred to the Committee on Examination, who directly reported favorably, and on ballot being taken he was unanimously elected a member of the college.

A communication from the Alumni Association was presented by Mr. Whitfield, chairman of Business Committee, which, on motion, was laid on the table.

On motion, adjourned.

At a meeting of the Board of Trustees, held on Thursday, October 28th, at 3 P. M., the following names were presented as candidates for membership in the college, and were, under the rules, referred to the Committee on Examination to report at next meeting: J. Roemheld, H. C. Maynard, Edward Templar.

On motion of Mr. Ebert, permission was granted the Drug Clerks' Association to hold their meetings in the college hall, and the Secretary was authorized to make such terms with them as he deems proper.

Moved and seconded that the Publishing Committee be authorized to make such arrangement with Mr. L. C. Hogan to edit the journal, and with other parties to obtain advertisements therefor on commission.

Adopted. J. J. SIDDALL, *Sec'y.*

CHICAGO DRUG CLERKS' ASSOCIATION.

A meeting was held in the rooms of the Chicago College of Pharmacy, Wednesday evening, October 6th, 1875. The meeting, after coming to order, called Mr. C. M. Ford to the chair, and Mr. A. G. Vogeler acting as secretary, after which the following preamble and resolution were submitted, and adopted by those present:

WHEREAS, It is thought that the drug clerks of this city can, by united action, greatly further their mutual interests, as well as derive much pleasure by getting more intimately acquainted with each other, be it

Resolved, That we, the drug clerks present at this meeting, constitute ourselves into a permanent organization, to be known as "The Chicago Drug Clerks' Association," the object of which shall be to offer an opportunity for exchanging ideas, and diffusing the knowledge gained separately in the pursuance of our vocation, by the reading of essays and by general discussions on questions of interest; and further, to establish a greater degree of friendship between the members of our profession by bringing them into more frequent social contact with one another.

C. F. Hartwig then read a draft for a constitution, which, after some discussion, was, on motion, submitted for consideration to a committee of five, to be reported upon at the next meeting. The following gentlemen were appointed to act on the committee: H. Martin, A. Scherer, H. W. Buchmann, C. F. Hartwig, F. Conrath.

On motion, the meeting adjourned to meet again in the hall of the Chicago College of Pharmacy, on Wednesday, October 13, at 8 P. M.

ADOLF G. VOGELER, *Sec'y, pro tem.*

Adjourned meeting, held Wednesday, October 13, 1875.

The meeting was called to order by the President. The minutes of the previous meeting were read and adopted.

Mr. H. Martin, chairman of the Committee on Constitution, then read a draught of a constitution and by-laws, which, on motion, was accepted, and, with few alterations, adopted.

The President then appointed the following committee to nominate officers: F. M. Kirkley, C. F. Hartwig, H. Clare, who subsequently reported, for President, C. M. Ford; Vice-President, H. Martin; Secretary, A. G. Vogeler; Treasurer, C. F. Hartwig; Trustees, H. W. Buchmann, F. Conrath, F. M. Kirkley.

On passing the ballot, the nominees were elected.

On motion, adjourned.

ADOLF G. VOGELER, *Sec'y.*

EXTRACTS FROM THE BY-LAWS.

LAW I., SEC. 1. Every drug clerk who has had three years' experience in the retail drug business, and is of good professional standing, shall be eligible to membership.

SEC. 4. The initiation fee shall be one dollar, and the annual dues one dollar.

LAW III., SEC. 1. The scientific meetings shall be held on the evenings of the first and third Wednesdays of each month.

SEC. 3. Members may introduce to these meetings clerks, students of pharmacy, and other persons having an interest in pharmacy, who shall be entitled to participate in the discussions.

LAW II., SEC. 3. The Secretary shall keep a record of members applying for a situation, and also of employers who are seeking clerks.

SEC. 6. Under no circumstances whatever shall a motion to form a "Trades' Union" be considered by this Association.

PHILADELPHIA COLLEGE OF PHARMACY—ITS SEMI-ANNUAL MEETING.

The semi-annual meeting of the Philadelphia College of Pharmacy was held Sept. 24th, in the College Hall.

The President, Mr. Dillwyn Parrish, occupied the chair. The minutes of the last meeting were read by the Secretary of the College, Mr. William J. Jenks, after which the minutes of the Board of Trustees were read by W. C. Bakes, the Secretary of the Board.

The delegates to the recent meeting of the American Pharmaceutical Association, held in Boston, made their report, which gave a gratifying account of the social and scientific features of the meeting.

Professor J. M. Maisch read a letter from Mr. Daniel B. Smith, of Germantown, formerly president of the College, donating a large and valuable herbarium and over 4,000 specimens. This gift was received, and the following resolution unanimously adopted:

That the thanks of this College be tendered to our former Secretary and President for his valuable present of an herbarium, and also for the interest he continues to show in our College and in the teaching of botany, which has become of such great interest.

Professor Remington, on behalf of the Board of Trustees, exhibited a large crayon photograph of the late President, Charles Ellis, which met the approval of those present as a faithful portrait of one of their most honored members.

The delegates to the convention of the Teaching College of Pharmacy also submitted their report.

Mr. Samuel F. Troth, an old and esteemed member of the College, presented a handsome photograph album containing the photographs of the older members of the institution, which was received with the thanks of the College.

Mr. Charles Bullock offered the following resolution, which was adopted: "That the Board of Trustees be requested to examine the existing United States law regarding the inspection of drugs, and to consider the propriety of endeavoring to have the law so amended as to permit the importation of certain drugs for the purpose of obtaining from them chemical products."

The semi-annual election for eight trustees was proceeded with, which resulted in the election of Dr. Wilson H. Pile, William C. Bakes, William McIntyre, Albert P. Brown, Edward C. Jones, Richard V. Mattison, Robert England, and A. W. Miller.

NEW YORK ALUMNI ASSOCIATION OF THE PHILADELPHIA COLLEGE OF PHARMACY.

The regular monthly meeting of the New York Alumni Association of the Philadelphia College of Pharmacy was held in Plimpton Hall, Tuesday evening, October 5th, President P. W. Levering in the chair.

Mr. Fairchild, as chairman of the delegation to the American Pharmaceutical Association meeting at Boston, made a report, giving a brief but exceedingly interesting review of the proceedings, calling special attention to Prof. Markoe's paper on a new process for preparing dilute phosphoric acid as of much value, and to the report of the Committee on Adulterations and Sophistications as showing the need of more than ordinary care and watchfulness in purchasing drugs. He spoke in the highest terms of praise of the cordiality and kind attention paid to members by the Boston druggists.

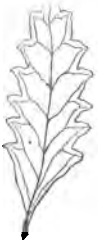

Fig. 1

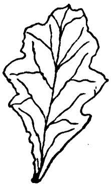

Fig. 2

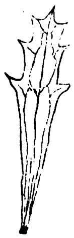

Fig. 3

Mr. Wellcome read a paper on Damiana, the new aphrodisiac, presenting specimens of the leaves and fluid extract received from Messrs. Helmick & Co., Washington; also, a specimen received from San Francisco, and some specimens obtained in the New York market. He stated that the specimens from the three different sources were from distinctly different plants (see plate, Fig. 1, Fig. 2, Fig. 3, full size of leaf). That obtained from Helmick & Co. (Fig. 1) has a smooth, dark green, broadly lanceolate, dentate leaf, usually having six teeth on each side, having midrib and ribs extending to the points of the teeth, from two to five lines in width and from six to twelve in length; it has a red woody stem, the leaves give a minty flavor when chewed, and which is fully represented in the fluid extract. The San Francisco damiana, which also claims Mexico as its habitat (Fig. 2), has a light green, oborate, deeply toothed leaf, having three and occasionally four teeth on each side, heavy midrib and branching ribs extending to the edge; the surface is rough, and both sides are covered with short, white hairs; it is from two to five lines in width and five to eight in length; its flavor, when chewed, reminds one of sage; the stem is very woody, and near the terminus is quite hairy. The specimens found in this market (Fig. 3) are identical; the leaf is light green; lancolate, three teeth on each side, which terminate with hard, sharp points; it has a distinct midrib and is rather indistinctly veined; is from one and a half to three lines in width and four to ten in length; is quite thick, and has a rough surface, with occasional black specks; to the naked eye, the leaf appears to be covered with shining scales, and renders it very handsome, but under the glass it shows minute, resin-like globules; this is the only specimen accompanied by flowers; they are white, with a yellow tint, and distinguish it as a compositae; the stem is woody, with green epidermis, and it is also covered with a minute, resinous excretion; this feature calls to mind the statement of Dr. Caldwell that the stem was covered with a gum of peculiar fragrance; although this can not be called fragrant, it has a distinct balsamic odor and taste; there has been considerable quantity of this variety brought into this market, and has found ready sale. It is yet to be determined which of these is the true damiana.

A paper on the Centennial in Pharmacy, by Mr. Wood, was read, giving a graphic sketch of the changes and advance of pharmacy during the past century, and leaving us yet in the very rudiments of the science, with a vast field for zealous workers.

Mr. McElhumie stated that he found oil of sweet almonds to be a good solvent and excellent vehicle for the application of iodoform; it takes up ten grains to the ounce. He also found that a few grains of sugar aids greatly in reducing iodoform to a fine powder, in which form it is frequently prescribed for dusting into the eye.

The subject of excipients for pills was discussed at some length, several new ones being suggested. Mr. Williams promised to experiment with them and present a paper on the subject.

Mr. Wellcome presented a specimen of the saoria seed, the new tape worm remedy, which is attracting much attention among the medical profession in Germany. This was obtained from Caswell, Hazard & Co., and is of the first lot brought to this market. It habitat is Abyssinia, Africa, where it is known by the natives as tatze zatze. The seeds are contained in a small, yellowish-brown spherical capsule, and are aggregated into a very small, round ball, with some orange-red pulpy matter. Wittstein finds it to contain boracic acid and a fatty oil. The dose is from six to eight drachms, crushed and given in some amylaceous food, such as hominy, oat meal, or peas boiled to the consistency of gruel, or in aromatic infusion of ginger ʒij, cassia gr. xv., water one pint—strain and add the crushed seed.

Hereafter the meetings of the Association will be held in Plimpton Hall, corner East 9th and Stuyvesant streets, first Tuesday evening in each month.

ST. LOUIS COLLEGE OF PHARMACY.

The following officers were elected for the ensuing year:

President, F. X. Crawley; Vice-President, Charles Bang; Secretary, Edward P. Walsh; Treasurer, Dr. Chas. L. Lips.

Board of Trustees: M. W. Alexander, Charles Stark, F. Samesreuther, Charles Habicht, E. J. Williamson.

Professors: Theodore Fay, M. D., chemistry; Otto A. Wall, M. D., materia medica; James M. Good, pharmacy.

THE ALUMNI ASSOCIATION OF THE COLLEGE OF PHARMACY OF THE CITY OF NEW YORK

Held its quarterly meeting Oct. 14th, President Close in the chair.

Mr. Close presented resolutions on the death of William Hegeman, Esq., of the class of 1837, which were passed.

Mr. Creuse proposed a simple method for assaying the granular citrate of magnesia of the market, which usually contains tartrate of soda. It consisted in igniting a small quantity of the salt, and then estimating by volumetric analysis, and by direct weighing, the amount of the two bases found in the ash. He was requested to give the details of the process in a paper to be read at a subsequent meeting.

Prof. Bedford spoke of the importance of the papers on phosphoric acid, read at the Boston meeting of the American Pharmaceutical Association, and read extracts from a letter from Prof. Markoe relative to the explosion which occurred recently in Philadelphia in using his process. He stated that this explosion was caused by the neglect to keep the vessels in cold water, and to add the bromine drop by drop. Mr. Runyon remarked that he had used Prof. Marcoe's process without observing any violent reactions.

Prof. Falke showed a tube containing amorphous phosphorous, which had formed from a solution of phosphorous in carbon bi-sulphide, after some weeks of contact at ordinary temperatures. He also exhibited fine specimens of Franklinite and other minerals from his cabinet.

Mr. Royce presented specimens of carnauba root, jaborandi wood, and Bael fruit, or Bengal quince, an officinal of the British pharmacy, described in the United States Dispensary, page 168, 13th edition.

The next meeting of the Association will be held in January.

L. M. ROYCE,
Secretary Alumni Association of the College of Pharmacy of the City of New York.

CALIFORNIA COLLEGE OF PHARMACY.

The annual commencement of the California College of Pharmacy—department of pharmacy, University of California—was held Tuesday evening, October 12, 1875.

Graduating Class of 1875—Robert C. Myers, New York; Thomas D. Graham, England; Gaston E. Bacon, France; Adolph Kahn, New York; F. P. McLean, New Hampshire.

Faculty—Wm. T. Wenzell, Professor of Chemistry; Wm. M. Searby, Professor Materia Medica; John Calvert, Professor of Pharmacy; Herman Behr, M. D., Professor of Botany.

Honorable mention was made of Robert C. Myers by the examining board and college trustees, he having the highest standing at the examination.

THE LATE BOSTON MEETING.

The last but not the least pleasant feature of the "Boston meeting," was the following: "The Executive Committee having in charge the arrangements for the late gathering of the American Pharmaceutical Association, enjoyed a dinner at the rooms of J. B. Smith, Tuesday evening, upon the invitation of Dr. Thomas L. Jenks. Upwards of twenty gentlemen were present, and the repast was a very elaborate one—in fact, one of the caterer's best. A balance of $300, left in the hands of the committee, was voted to the Massachusetts College of Pharmacy. During the evening Mr. S. A. D. Shepard was presented with an elegant French mantel clock, and Mr. William F. Horton with a beautiful gold-headed cane, in recognition of their services for the success of the late convention. The affair was a very pleasant and enjoyable one."

AMERICAN PUBLIC HEALTH ASSOCIATION—ANNUAL MEETING, 1875.

The American Public Health Association will convene in Baltimore, Tuesday, November 9, 1875, in accordance with the adjournment of the previous annual meeting. The following order of business has been adopted by the executive committee, in compliance with Article X. of the Constitution of the Association: The meetings will be held at the Academy of Music, Howard street, Baltimore.

ORDER OF BUSINESS.

Tuesday, November 9—The session commences at 11 A. M. (1) Registration of Members and others in attendance. (2) An Address of Welcome to the Association, by James A. Steuart, M. D., Health Officer of Baltimore, and Chairman of Committee of Arrangements. (3) Introductory Address, by Joseph M. Toner, M. D., President of the Association. (4) Dwelling Houses in their Relations to Health, by Ezra M. Hunt, M. D., of New Jersey. (5) Sanitary Principles in Home Architecture, by H. W. Dean, M. D., of Rochester, New York. (6) Report by the Secretary of the Association on the information obtained concerning the public health and the progress of sanitary works in the cities of our country the past year. (7) Discussion of questions presented in the President's address and the Secretary's report.

First—What public necessities require that there shall be a Central or State Board of Health in each State, and with what authority and duties should the State Board of Health be endowed?

Second—How shall Local and State Boards of Health effectually supervise the Registration of Vital Statistics, especially as respects Causes of Death, and investigate the sources of preventable diseases, so as best to promote the public welfare?

Discourses: Tuesday Evening—8 o'clock, P. M.—Hon Reverdy Johnson presiding. Address by Hon. Mr. Johnson. Discourse, by Daniel C. Gilman, LL.D., President of the Johns Hopkins University, Baltimore: "The Place of Modern Biological Sciences in the Universities and Colleges of the present day."

Wednesday, November 10—9 A. M.—Business meeting and reception of voluntary papers, etc. The session commences at 10 A. M. (1) Report of Committee on the Plan for a Systematic Sanitary Survey of the United States, with Introductory Remarks on Medical Topography, by John S. Billings, M. D., of Washington, Chairman of Committee. (2) Statement by Jackson S. Schultz, Esq., of New York, on the Utilization of Animal and Vegetable Refuse Substances in our large cities: Discussion on this subject. (3) Report on the Sanitary Condition of Watering Places and Popular Resorts, by Prof. Henry Hartshorne, M. D., University of Pa. (4) A Report on the Drowned Lands of Orange County, New York, and Sussex County, New Jersey, and the Sanitary and Economic importance of Drainage for them, by Prof. George H. Cook, State Geologist of New Jersey. (5) A Paper on Public Health Interests concerned in the Preservation of certain Primeval Forests, and in the cultivation of Groves and Trees, by Franklin B. Hough, M. D., of Lewis county, N, Y. (6) A Paper on Hereditary Entailments in the Domestic Animals and in the Human Family, by Prof. James Law, M. D., D. V. S., Cornell University, N. Y. (7) Report on the Eradication of Hereditary Defects, by J. R. Black, M. D., of Ohio—(Supplementary to report commenced in 1874). (8) Soil Drainage and Atmospheric Humidity, considered with reference to their influence upon Health and Disease, by Sanford B. Hunt, M. D., New Jersey. (9) A report on Drainage, Sewerage and Water Supplies of Cities, by Gen'l Egbert L. Viele, C. E., New York. (10) Moisture of Dwellings and Sick Rooms considered in connection with that of the Atmosphere, by Fred. Petteisen, M. D., Health Officer, San Antonio, Texas. (11) A Paper on the Selection of Wells and Springs of Drinking Water, and the Sanitary Protection of them, by Prof. Edward Orton, Ph.D., President Agricultural College, Ohio. (12) A Report on Drinking Waters as affected by the Geological Strata and Soils through which they percolate, by Prof. W. C. Keer, State Geologist of North Carolina. (13) A Paper on Nervous Diseases among School Children, with Suggestions for its Prevention, by Allen McLane Hamilton, M. D., New York. (14) A Paper on the Popularization of Sanitary Science by Schools, by Prof. E. W. Claypole, Antioch College, Ohio. (15) A Paper on School Hygiene, by D. F. Lincoln, M. D., Boston, Mass. (16) Discussion resumed of the Report on a Sanitary Survey of the United States.

Discourses: Wednesday Evening—8 o'clock, P. M.—Hon. J. Vansant, Mayor of Baltimore, presiding.

First Discourse—By Prof. F. Donaldson, M. D., "The Influence of City Life on Diseases of the Respiratory System."

Second Discourse—By Prof. Stephen Smith, M. D., "The Application of Sanitary Principles to the Limitation of Perilous Massing of Populations in our Cities."

Thursday, November 11—9 A. M.—Business meeting and election of officers and committees. The session commences at 10 A. M. (1) Report on Efficient House Connections with Sewers, and the Protection of Houses against Sewer Gases, by Frank Hambleton, C. E., Baltimore. (2) Report on Principles and Methods of Ventilation, by Carl Pfeiffer, F. I. A., New York. (3) A Paper on "Penny Wisdom and Pound Folly," or the Cost of a Great Epidemic to a Great City, by Benj. Lee, M. D., Philadelphia. (4) A Report on Laws, Sanitary Provisions and Methods for securing the benefits of general Vaccination throughout the country, by Elisha Harris, M. D., New York. (5) Sanitary and Economical Advantages of Small Hospitals or Village Infirmaries for Manufacturing and Mining Populations, by Thomas J. Dunott, M. D., of Harrisburgh, Pa. (6) A Paper on the Relation of Unsanitary Conditions to Pauperism, Vice and Crime, by A. N. Bell, M. D., New York. (7) A Paper on the Relations of Excessive or Habitual Use of Alcoholic Drinks to Public Health and Public Welfare, by Homer O. Hitchcock, M. D. Kalamazoo, Michigan. (8) A Paper on the Sanitary Relations of Inebriety, by Prof. N. S. Davis, M. D., Chicago. (9) A Paper on the Public Health as affected by Drinking Usages and Drunkenness, by A. F. Hibbard, M. D., Richmond, Ind. (10) Propositions and a discussion on the practical questions relating to House Drainage and Street Sewerage, by J. H. B. Latrobe, Esq., C. E., Frank Hambleton, Esq., C. E., and Mr. Shepard, C. E. (11) A paper on Yellow Fever on Pensacola Bay, Fla., in 1875, by Harvey E. Brown, M. D., Asst. Surg. U. S. A., Fort Barancas, Florida. (12) A Report of Sanitary Results of the Excursions and Open-Air Treatment of Sick and Feeble Children of Chicago, Ills., on Lake Michigan, in the summer of 1875, by B. C. Miller, M. D., Sanitary Superintendent of Chicago. (13) A paper on the Special Causes which produce excessive Infant Mortality in Montreal, Canada, by J. J. Dugdale, M. D., Health Officer of Montreal. (14) Facts Relating to Diseases among the Indian Tribes of North America, by Joseph Curtis, M. D., Supervising Medical Officer to the Indian Bureau, Washington, D. C. (15) A Paper on Ozone and its Effects upon Diseases of the Respiratory Organs, by Fred. Pettiesen, M. D., Health Officer of San Antonio, Texas. (16) A Paper on Infant Mortality in the State of Michigan, by H. B. Baker, M. D., Secretary State Board of Health, and Register of Vital Statistics of Michigan.

Discourses: Thursday Evening—8 o'clock, P. M.—Prof. N. R. Smith, M. D., presiding. (1) Address, by Professor Smith. *Discouase*—A Sanitary view of the question, "Am I my Brother's Keeper?" by Hon. L. H. Steiner, M. D.

Friday, November 12—The session commences at 9 A. M. Conference on resolutions and questions submitted for action by the Association.

Officers for the Year 1874–1875.—President, Joseph M. Toner, M. D., Washington, D. C.; Vice-President, Henry Hartshorne, M. D., Pennsylvania; Treasurer, John H. Rauch, M. D., Illinois; Secretary, Elisha Harris, M. D., New York.

Elected Members of the Executive Committee.—Stephen Smith, M. D., N. Y.; J. A. Steuart, M. D., Md.; J. J. Woodward, M. D., U. S. A.; J. S. Billings, M. D., U. S. A.; Moreau Morris, M. D., N. Y.; A. N. Bell, M. D., N. Y.

COCOANUT PALM (*Cocos nucifera*, LIN.) is very widely distributed between the tropics, generally affecting the neighborhood of the sea, and especially abundant in India and the Pacific Islands, where its tall and cylindrical trunk, from 60 to 100 feet in height, crowned with many gracefully waving feather-like leaves, fringes every islet and forms one of the most striking beauties of the scenery.

Almost every part of the tree, as in a few others of the palm tribe, is applied to important uses. The wood, imported into Europe under the name of *porcupine wood*, is employed for building purposes, the construction of chairs and fancy articles. From the leaves, besides their general use as a thatch and in hut-making, baskets and screens are made, while those young and tender are cooked and eaten. Of the well known nutritious fruit, the *cocoanut*, several bunches of a dozen or more are borne by each tree. From the shell of the mature nut, various useful or ornamented vessels, spoons, etc., are cut and carved, and from the fibrous rind or husk which envelopes it is prepared the "*coir*" of commerce, so extensively used in the manufacture of mats, carpets, brushes, cables, bags, etc. The fibre is prepared from the husk by steeping and beating.

From the kernel, boiled and bruised or grated, is obtained the cocoa nut oil largely employed in the manufacture of excellent candles, and also of soap. Of this oil, in 1870, 197,788 cwts. were imported.

CORRESPONDENCE.

Editor of the Pharmacist:

In your report of my paper on Hydrate of Chloral, you make me state, "*formic acid* was the most injurious contamination likely to be found in it."

Your reporter was in error in so reporting it. My paper stated the well known fact that formic acid resulted from the reaction that takes place when hydrate of chloral is brought in contact with an alkali, and *resuggested* the other fact that it afforded a ready means of estimating the value of any given sample of hydrate of chloral.

Be kind enough to make the correction in your next issue.

Yours truly,

BALTIMORE, Oct., 1875. JOS. ROBERTS.

REVIEWS AND BOOK NOTICES.

Circulars of Information of the Bureau of Education. No. 3. 1875. An account of the systems of public instruction in Belgium, Russia, Turkey, Servia, and Egypt. No. 4. 1875. Waste of Labor in the Work of Education. By P. A. Chadbourne, LL.D., President of Williams College, Mass. No. 5. 1875. Suggestions respecting the educational exhibit at the International Centennial Exhibition, 1876. No. 6. 1875. Statements relating to the reformatory, charitable, and industrial schools for the young. Washington: Government Printing Office. 1875.

Tinnitus Aurium, or Noises in the Ears. Second edition, with cases. By Laurence Turnbull, Ph. G., M. D. (Reprinted from the Philadelphia *Medical Times,* June and October, 1874.) Philadelphia: J. B. Lippincott & Co. 1875.

Practical Hints on the Selection and Use of the Microscope. Intended for beginners. By John Phin, editor of *The Technologist.* 1 vol., 12mo., fully illustrated. Price, 75 cents. New York: Industrial Publication Company, 176 Broadway.

Annual Report of the Board of Regents of the Smithsonian Institution. Showing the operations and conditions of the Institution for the year 1874. Washington, D. C. 1875.

Received from Prof. Dr. G. Dragendorff, Dorpat, Russia, an essay on Antiseptica and Bakterien, by Leonid Bucholtz, stud. med.

Untersuchungen aus dem Pharmaceutishen Institute in Dorpat, von Ed. Marquis.

THE PHARMACIST.

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GRINDELIA ROBUSTA.

A PAPER BY JAMES G. STEELE, OF SAN FRANCISCO, CAL.—READ BEFORE THE 23D ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, BOSTON, SEPTEMBER, 1875.

Considerable attention has been directed of late years to the California "Grindelias," specimens of which are to be met with in different parts of the State, and which early attracted the attention of the Jesuit Fathers who established "missions" under the patronage of the Mexican Government, some sixty or eighty years before the conquest of the country by the Americans.

Divers botanists, who have visited our State from time to time since the establishment of these missions for the "regeneration" of the native races, have also noticed and written about the Grindelias. Several writers, among whom may be mentioned Shelton, Gibbons, Canfield and Smith, have published, from time to time, information touching the natural history and therapeutic effects of the Grindelias; but it is particularly the *Grindelia robusta* which I desire to introduce to the notice of our profession. Grindelia robusta seems to exercise a specific effect in cases of poisoning by the famous (or more properly *infamous*) "Poison Oak," of California. Of late years, its happy effects in reducing the frequency and violence of the spasmodic constrictions of the throat and contiguous organs from asthma and kindred diseases, are so well authenticated as to claim for it a new and important place in our national materia medica.

In the woods and thickets of California, as well as on the dry hillsides —in fact, in every variety of locality—may be found a very venomous shrub, the "poison oak," or "poison ivy," the "hiedra" of the Spanish and native California people, the dread of all those who are acquainted with it. This plant is known to botanists as "Rhus diversiloba," or "Rhus toxicodendron," and resembles the poison ivy of the Atlantic States, both in appearance and poisonous qualities. It has a somewhat climbing stem with short, leafy branches, and is easily recognized from the fact of discoloration of many of its leaflets, caused by the oxidation of the green coloring matter of the plant, in this respect differing from other shrubs and climbing plants. As is well known, poison oak is the cause of a vast deal of misery and suffering in California. There is scarcely ever a time in any little town or neighborhood where there are not one or more persons suffering from it, and it has been estimated that there are in this State near three thousand persons constantly afflicted with the cutaneous disease caused by this dreaded scourge. Not only tourists and occasional visitors into the rural districts from our cities, but even farmers and laborers are liable to this poisoning; and besides the suffering and annoyance caused by it, the loss of valuable time is no small item to be taken into account. As has been often remarked, it would seem that whoever makes known a prompt and sure antidote to this poison would be considered a public benefactor.

Many and various have been the "remedies" with which our local practitioners have endeavored to combat the effects of the universally dreaded "*poison oak.*" When I mention a few, such as lotions and ointments of lead, bismuth and opium compounds, applications of hartshorn and various alkaline salts in every variety of combination, it will be seen that not only is this scourge of wide prevalence, but of deep, practical interest to the physician and pharmacist, for every medical practitioner meets with more or less cases of it in his daily rounds. The many remedies which have been used for counteracting the effects of the "poison oak" all give way in efficiency and celerity to the "*Grindelia robusta.*" This, like the *Rhus toxicodendron,* is indigenous to the State, and found in many parts, but grows most luxuriantly in the foot hills of the Sierra Nevada and coast ranges of mountains.

Grindelia robusta is a tall, stout perennial, belongs to the composite family, and looks like a small sunflower. It is from one to three feet in height, and has bright yellow flowers in heads one to two inches in diameter, flowering from June to October. Before flowering, the unexpanded heads or buds secrete a quantity of resinous matter, a white and sticky-like balsam, that is finally, after the flower expands, distributed like varnish over the petals of the flower. The whole plant at this season, flowers and leaves, is resinous and viscid. When it grows in dry hillsides it is stiff and rigid, with narrow, thin leaves; but in damp localities, it is more robust and succulent, with wide, fleshy leaves. May and June are the months in which Grindelia should be gathered for use, as at that time the plant abounds most in the balsamic and resinous juice in which its medicinal properties reside, and causes its marvelous effects in the cure of the eruption from oak poisoning, and the suppression of asthma, for which latter purpose it has been used with surprising effect since the occupation of the country by the Americans.

Dr. C. A. Canfield, of Monterey, California, (deceased,) was the first to call the attention of the medical profession to the therapeutic action of Grindelia robusta in cases of oak poisoning. Some twelve years since, he caused to be published in the *Pacific Medical and Surgical Journal* a short account of this plant, its botanic features, habitat and medicinal value. My attention being thus directed to the plant, I procured specimens and prepared various pharmaceutical compounds containing the virtues of the drug, which were prescribed by the medical faculty of this city with sufficient success to warrant me in keeping a requisite supply of the plant. It has been my practice yearly, during the months of May and June, to go into the rural districts and have gathered and dried in the shade, from one to two tons of Grindelia robusta.

Since the mention made by Dr. Canfield, as above, however, a new use has been found for this variety of the Grindelias—asthma and its kindred ailments have been made to succumb in a remarkable manner. Dr. Q. S. Smith, of Cloverdale, Lonoma county, California, published in the *Pacific Medical and Surgical Journal* for April, 1875, some notes on the efficacy of the *solid extract* of Grindelia robusta in several cases of asthma, etc., which had come under his observation. He writes that one patient, to whom pills made of the solid extract were administered, "had suffered from severe and frequent attacks of asthma since childhood, and found no relief from many physicians and divers remedies. About five months ago, he commenced taking the extract of Grindelia in pills of three grains each, one three times a day for two or three days, then a pill at bedtime only for eight or ten days longer. Under this mode of treatment the attacks became lighter and more remote, and during the interval between the attacks he gained in flesh and strength, and improved greatly in his general health. More than four months have passed since the patient has felt any symptoms of the approach of his old enemy, once the plague and terror of his life. He is now heavier and stronger than ever before in his life, and can climb the rugged mountains of his sheep ranch and the surrounding country with an endurance, agility and speed unsurpassed by any of his neighbors. We think this happy change due entirely to the virtues of the remedy mentioned, as our patient took no other medicine and continued to follow the same employment, and was circumstanced just as he had been for years before."

I send herewith samples of the entire tops of the plant "*Grindelia robusta,*" and fluid and solid extracts made from the same, according to the descriptions below. I have had Grindelia from all sections of the country, but have found that the plants grown in the rolling country or so-called "foot-hills" the best. The specimens I send were obtained from "Green Valley," a township in Solans county, about sixty miles northeast of San Francisco, and were gathered in the month of May, 1874, from the hillsides of that section. About two and a half tons were picked, dried in the shade and securely packed against the influence of changes of weather or ravages of insects, etc. I have experimented in different ways to obtain a "fluid extract" which should fully represent the medicinal virtues of the leaves and flowering tops of the plant. Sample No. 1 is made with the officinal alcohol, and represents in one pint the strength of sixteen troy ounces of the dried leaves and tops of the plant. The "*Grindelia,*" even when well dried, contains a large proportion of the sticky "balsam" before mentioned, and repeated experiments have shown me the inutility of attempting to proceed with it as in the treatment of the ordinary barks, roots, leaves, etc., as, in grinding or comminuting in a drug mill or mortar. I have found the most feasible method, and the one furnishing the most satisfactory results, to be that of macerating the carefully picked leaves and tops in a suitable vessel with strong alcohol enough poured over to not quite cover the mass, for a period of twenty-four hours, a strong cover being laid over and pressed down with appropriate weights. At the expiration of this time, the whole is transferred to a percolator with stop-cock attached, and after remaining for five or six hours, the impregnated liquid drawn off and the residue in the percolator taken, transferred to strong bags and submitted to the action of a powerful press; the liquid from this is now mixed with that from the percolator and set aside. It is generally requisite to repeat the process with one-half the amount of menstruum, and the results being mixed together should measure one pint for every sixteen troy ounces of the drug employed. In case, however, the full measure requisite is not obtained, enough alcohol is added to supply the deficiency, and the whole rapidly filtered and transferred to well stopped bottles. A clear, thin, nice looking *fluid extract* is produced, with a pleasant odor and characteristic aromatic taste, and which can be kept a long time, with usual precautions, without any deposit. Considerable objection has been made, however, to the strong alcohol in preparing the *fluid extract* for external as well as internal use, and the sample marked No. 2 is a *hydro-alcoholic fluid extract,* made like the above, save the substitution of one part of water to two of alcohol, which gives a fluid extract equal in all respects to the former save in appearance, a slight turbidity being apparent when a small quantity is held to the light. It has been my custom of late years to dispense and furnish to the trade the *fluid extract of Grindelia* made in this manner, unless otherwise directed.

It may be presumed that the medicinal virtues of the *Grindelia robusta* reside in the sticky, viscid and resinous juice before mentioned. Confirmatory evidence offers itself in the fact that the plants gathered from the lower and marshy grounds are more robust and succulent, the leaves and stalks longer and coarser in appearance, and devoid almost entirely of the "balsam" before mentioned, and, as has been observed, of little efficacy in asthma and the eruption from "oak-poisoning."

Experiments made on the freshly-gathered, undried plant with various solvents, have produced "extracts" in nowise differing in the therapeutic effects or physical properties from the dried plants, as above. No attempt has been made to investigate the viscid juice; but doubtless, like the "balsams" or "liquid resins," it contains various constituents, and probably a volatile oil, to which its remedial effects and strong characteristic odor and taste are to be partly attributed.

I send also a sample of the solid extract of Grindelia suitable for making pills, to be given in violent and prolonged attacks of *asthma,* etc. This extract is made by taking the tops and leaves of the plants and operating upon them with a mixture of equal parts of alcohol and water, extracting the soluble elements in the same manner as described in the process for making the fluid extract, distilling off one-half the bulk in a "Procter's still," and slowly evaporating the residue to the consistency of a thick syrup, adding a minute quantity of glycerin, and pouring, while yet warm, into suitable jars, when, upon cooling, it will be found to be of the consistence of an ordinary solid extract, and easy of manipulation by the dispenser. The directions to be observed in the administration of these medicines are not very elaborate and can be quoted here, perhaps, with advantage.

For poision oak eruptions, the method suggested is, to mix one or two tea-spoonfuls of the *fluid extract Grindelia* with half a tumbler of cold or tepid water, and apply freely with a sponge or cloths dipped in the mixture to the parts affected. One or two applications will often suffice for a cure; but if the disease has been of long duration, several days may elapse before entire relief is obtained. In severe cases of poisoning, cloths dipped in the solution may be bound upon the parts, and, if necessary, more of the fluid extract added, thus increasing the strength of the application. The most obstinate case of poisoning will give way to this mode of treatment, and immediately after the first application a most surprising relief is experienced. In cases of asthma, rose cold and hay fever, ten to twenty drops of the fluid extract may be given every half hour, mixed with sweetened water or milk, until *relief is obtained,* when the amount and frequency of the dose can be lessened according to the measure of *relief obtained.*

The solid extract is made into pills of three grains each, and given as described in another part of this paper, three times a day, one or two of the pills being administered for each dose.

EMULSIONS.*

BY HUGO W. C. MARTIN.

An emulsion is an aqueous mixture holding an oil or oily substance in suspension by the aid of a mucilaginous agent, and may be classified natural and artificial emulsions. Natural emulsions we find, as milk in the human being and animals, and as a juice of various plants; while artificial emulsions generally occur in the practice of pharmacy. To the latter only will my references be made. Every good pharmacist or druggist should be capable of preparing a perfect emulsion, which consists in having the oil so well incorporated in the liquid, by the aid of gum arabic or some other mucilaginous substance, that no separate globules of oil will be floating on the surface of the liquid; nor shall the oil, after the emulsion has stood any length of time, separate and rise to the top, excepting combined with the gum, or after fermentation has set in. It should, also, with few exceptions, have the color and appearance of pure milk, unless other ingredients are component parts of the mixture. There are various modes for the preparation of emulsions, viz: *first,* by rubbing the oil and pulverized gum together in a mortar, then adding the water; a *second,* by rubbing the gum and water together first, then adding the oil; a *third,* by putting all three ingredients in the mortar and stirring briskly; while a *fourth* method is to have the gum in the state of mucilage, and incorporating the oil. The first method I consider as the best, not being troubled with clots of gum, as is often the case in the second, by rubbing together the gum and the water first; nor is it necessary to rub as long as in the third case, thus saving time. The objections to the fourth method are, that mucilage is very prone to sour, and since an emulsion itself ferments quite readily, a sour mucilage would only hasten the fermentation. The precaution necessary in the first method is to have a perfectly dry mortar, otherwise a part of the gum, when rubbed with the oil, will adhere to the bottom and sides of the mortar, where a drop of water is present, and make it tedious work. A *fifth* method has been proposed by Mr. Chas. F. Hartwig, which does away with the mortar. He claims the inventorship of a certain apparatus, christened by himself "The Emulsifier." Now, as I am always on the alert for any thing new and valuable in the line of our profession, my attention was called to the instrument. I provided myself with a small size female syringe and a quinine bottle (as directed by Mr. Hartwig), and proceeded according to the directions given in the PHARMACIST. My first five or six trials were failures, besides breaking several syringes. I considered this invention a failure, when I thought of the old saying, "Try, try again," so on I went to give it a fair trial. The cause of the failures was partly attributed to the impossibility of emulsifying the oil in all parts of the bottle. I therefore took a four-ounce graduate, which tapered down considerable towards the base, proceeded as before, and obtained an imperfect emulsion; a few more trials, and a perfect emulsion was obtained. I now proceeded to prepare a number of emulsions as a trial test. The articles to be used were in each case placed at hand, the time being counted from the first step in preparing the emulsion to its finishment. For the emulsions made with the emulsifier I used mucilage, for those with the mortar, pulverized gum arabic. The following table gives the result, viz.:

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* Read at a meeting of the Chicago Drug Clerks' Association, November 17, 1875.

							Min. Sec.
No. 1.	With	*Emulsifier,*	oil turpentine,	ʒi to ℥ii	(quite imperfect).	Time,	1.20
"	"	*Mortar*	" "	ʒi to ℥ii	(perfect).	"	1.40
No. 2.	"	*Emulsifier,*	" "	ʒi to ℥iv	"	"	1.10
"	"	*Mortar*	". "	ʒi to ℥iv	"	"	1.10
No. 3.	"	*Emulsifier,*	castor oil,	ʒi to ℥ii	(somewhat imperfect).	"	1.45
"	"	*Mortar,*	" "	ʒi to ℥ii	(perfect).	"	1.40
No. 4.	"	*Emulsifier,*	" "	ʒii to ℥iv	"	"	2.30
"	"	*Mortar,*	" "	ʒii to ℥iv	"	"	2.15
No. 5.	"	*Emulsifier,*	bals. copaiva,	ʒi to ℥ii	"	"	1.25
"	"	*Mortar,*	" "	ʒi to ℥ii	"	"	1.25

In several other trials with oil turpentine, the time of the emulsifier was considerably the shortest; whereas, in the heavier oils the mortar was the victor. The disadvantages of the emulsifier are: the adhesion of the oil to the outer side of the syringe; causing the floating globules of oil on the surface of the emulsion; its uselessness in preparing seed and some of the oleo-resin emulsions, and the greater difficulty in its manipulation to that of the mortar. One advantage I found, however, that the proportion of *water* to the gum may be greater in the emulsifier than the mortar. I succeeded in making a perfect emulsion with the oil of turpentine and mucilage (the latter of the strength of one part of oil to three of gum arabic) in the emulsifier; whereas, the trial with the same oil and mucilage in the mortar was a failure. I also claim that a turpentine emulsion can be made in less time with the emulsifier than with the mortar.

I would now make a few suggestions to Mr. Hartwig: let the shape of the container be similar to a graduate, tapering downwards and graduated into drachms and ounces; have the syringe made of hard rubber (to prevent breakage), with a piston covered with soft rubber instead of cotton twine, which absorbs some of the oil.

Thus far my experience with the emulsifier leaves me still in favor of the mortar and pestle; for it does seem that by their use the oil can be brought into a more minute state of division. However, should the previous suggestions be followed, together with Mr. Hartwig's statement, "a flat-bottomed syringe with more perforations," the time may yet come when the emulsifier will be a rival to the mortar and pestle as to time and perfection in preparing emulsions. I should be greatly pleased, however, should others try the experiment and repudiate my statement.

ALUM IN WYOMING TERRITORY.

Alum is a double sulphate of alumina and potash, containing 24 parts of water to 1 of sulphate of potash, and to 1 part of sulphate of alumina. There are also various other alum combinations with other sulphates, but in just exactly the same quantity as the above named. Those other sulphates are sulphate of ammonia, soda, iron, magnesia and manganese; and a hydrous sulphate of alumina, called feather alum, a very impure substance.

The potash alum is the variety more commonly in use; it occurs in clay slates, shales and clays. Alum is formed by the decomposition of iron pyrites. It is cubical crystal, also in regular octahedrons; the cubical form derived from an octahedron. In the process of alum formation in nature, as the pyrites decomposes, the sulphur and iron unite with oxygen, which is derived from the water present, and then becomes a compound of oxyd of iron and sulphuric acid. The sulphuric acid readily unites with the clay and the sulphate of alumina is formed.

With the 1 part of magnesia or ammonia a good commercial alum cannot be formed. To determine if the substance carries the sulphate of alumina instead of the other substances, heat to redness and wet the mass with nitrate of cobalt in solution; heat again, and if it assumes a blue color before fusion, the alumina is present.

If ammonia or soda replaces the alumina it does not change the crystallization. Soda alum is found in three or four places in France, South America and Wyoming. Ammonia alum is manufactured in France to a considerable extent, but is inferior to the first.

Alum is used largely for preserving and tanning skins; for coloring in cotton and other goods; for dyeing, whitening and hardening tallow or candles; for purifying liquors; in medicine and glazing paper. It is also used extensively in the adulteration of bread, giving it a white color. Alum applied to wood or paper that is porous, renders it utterly incombustible, and free from the attack of worms.

The first mention that we learn was made of alum was by Pliny, but this substance was very probably the green vitriol of the present time. The origin of alum is very much obscured. We can discover that it was in use in the fifteenth century, and at a later period maufactured at Rocca and Odessa, in Syria. From the former place the rock alum of commerce took its name. In the fifteenth and sixteenth centuries alum was made in Italy, in Constantinople and in Smyrna. In Italy the pope protected it against importation from the other countries, and made large amounts from its manufacture and sale. About this time it was introduced into Germany, and extensively made in that country.

While Queen Elizabeth was on the British throne, Thomas Chalour commenced its manufacture at Whitby. The pope did all he could to break up this manufactory, but he did not succeed, as the same works are in successful operation at this time. Near Glasgow, in Scotland, there are two extensive industries producing alum.

The alum at most all the European works is produced from an argillaceous slate which is largely composed of alumina. This form of alum is of sedimentary origin, and forms much the greater portion of the substance from which alum is produced. But there are quite extensive deposits of alum stone, a combination of alumina, potash, sulphuric acid and water, in a crystalline condition. We are told that this rock-alum stone is only found in volcanic regions, but this is an error. In several localities in the western territories there is alum stone in the tertiary and cretaceous formations. The sediment from which these strata were piled up may in part be the result of decomposed scoria and volcanic matter; but conditions now have no volcanic presentations. Wherever alum stone is found, it may be quarried like any other rock, and at no great expense.

Alum is made from alum stone, by placing the rock in large kilns made of sandstone, or in heaps on the ground, or in pits in the ground, or in deep trenches. When the rock is in position in any of these places, it must be watered regularly every day by sprinkling; if in pits or klins, a very slow fire adds more rapidly to decompose the stone. When all is reduced to fine powder, the second stage of operation commences by boiling the powder in water in lead pots by the use of steam. Evaporation quickly goes on, the earthy matter settles to the bottom; the liquid is drawn off and crystallizes into the article known as Roman alum, with a purple or reddish hue, from the presence of a small quantity of sesquioxide of iron.

Alum slate is much more easily treated and gives more of the article to commerce. Alum slate is found in Canada, Pennsylvania, New York, Connecticut, Massachusetts, California, New Mexico and Wyoming. This alum, or argilleaceous slates contains iron pyrites in large quantity. In treatment, a portion of the sulphur sublimes, the remainder quickly absorbs oxygen, and readily passes into sulphuric acid. Now a combination with the iron in the pyrites is effected; also a portion with the alumina of the argillaceous slate, and a proto-sulphate of iron is formed. This is simply green copperas. The other component part is the sulphate of alumina, which is the base of alum; the addition of potash consolidates, and cubic alum is produced.

To detect these slates, look for grayish efflorescence upon the surface where exposed. Most of these slates will be found to crumble easily and have an acid taste.

The calcining of these slates is by no means a difficult matter. Their treatment is very simple, and is not materially different from that of the alum stone. Where these slates are treated in various countries the prosesses are not dissimilar, but are much more extensive in some than others. In the Whitby works, in Scotland, piles of the slate containing many thousand tons are in process of calcination at a time. After the first heat is secured to start the process, no more fuel is required, as the chemical condition present furnishes all that is needed. In these works, when the calcined slates are fully decomposed, and the sulphur has become sulphuric acid, and combined with the oxide iron and alumina, they are placed in large vats and lixivated with pure water. Then this liquor is boiled and the earthy matter thrown down as before stated. The solution now had by evaporation is as before basic alum and copperas. The iron salt is now easily got rid of by throwing the liquid in receivers and letting crystallization do its work of separation.

In the United States there are a number of extensive alum works. They are in Salem, Mass., and at Philadelphia. Alum is manufactured here by treating the clay directly with sulphuric acid, and adding the potash.

The deposits in Wyoming are at Point of Rocks, on the U. P. railroad, near Evanston, Percy; on the breakwater; four localities along Bitter creek and near Ogden in Utah. The most extensive deposit determined, exist at Point of Rocks, and in that immediately locality. The argillaceous slate here occur immediately along the line where the lower tertiary coal measures come down to the upper cretaceous. Here are slates and clays deposited to a depth of 13 feet, and as rich in alum producing qualities as are found in the world. A great part of this bed or strata is already in a transition state, and only requires lixivation, and crystallization. Nature has fully carried forward the calcining process, and there are thousands of tons ready for treatment. The process for calcining can be very cheaply carried on here; coal but a few feet away, and plenty of water from white sulphur springs can be easily conducted to the pits, ovens, or heaps of slate, also for the lixivation processes. Right here are some of the most extensive sulphur deposits in the country; and in connection with alum works, the manufacture of sulphuric acid could be cheaply and largely carried on.

The decomposed slates that are alum-producing underlie many thousands of acres, and are exposed in eleven places in this region; none more than three miles from the line of the Union Pacific railroad.

Alum can be manufactured here at a less price than elsewhere; the supplies are present in such abundance, superior quality and combination, that there is no question admissible of the above statement. With a steady production of alum, sulphur and sulphuric acid on the line of the road, the management of the Union Pacific Railroad Company can afford it liberality in transportation that will completely foster these industries, and place their products in the markets of the world at a very liberal profit.—*Extracted from a Communication by a Correspondent.*

It is rumored that the "NOSTRUM RING" contemplates the consolidation of the *Boston Journal of Chemistry*, the *Druggist* and the *Pharmacal Gazette*. This new "NOSTRUM ADVOCATE" is to be placed under the editorial management of Benj. Lillard, Phar. D., assisted by Drs. Polk and Rother. *Oh! won't it be fun!*

THE PAPYRUS EBERS.

The Astor library, New York, has quite recently come into possession of a work of extraordinary antiquity, which will prove of immense value to the archæologist, historian and student of science. This remarkable book is a fac-simile of an Egyptian medical treatise, written in the sixteenth century B. C., and consequently more than 3,400 years old. Though strictly a medical work, it reveals much relating to ancient Egyptian domestic life, and is with out doubt one of the most important contributions to the history of medical science ever discovered.

The title translated is as follows:

Papyrus Ebers, the Hermetic Book of Medicines of the Ancient Egyptians, in Hieratic writting. Published, with Synopsis of Contents and Introduction, by George Ebers. With a Hieroglyphic-Latin Glossary by Ludwig Stern. Under patronage of the Royal Bureau of Education in Saxony. Leipzig, William Englemann, 1875. Two volumes. Folio.

The papyrus, of which this work is a fac-simile reproduction, was discovered by the archæologist Ebers, during his visit to Egypt in the winter of 1872-3. Ebers and his friend Stern were residing at Thebes, collecting archæological data, and there became acquainted with a well-to-do Arab from Luxor, who brought to them for sale a wooden image of Osiris and a papyrus of no especial value. Suspecting that the Arab was holding in reserve objects of greater interest, Ebers offered him a considerable sum for any superior specimens in his posession. This induced the Arab to return on the following day, bringing with him a metallic case containing a papyrus roll enveloped in mummy cloths. Ebers immediately perceived he had a prize, but was unable to command the large sum of money demanded for it until provided with the means through the liberality of a German gentleman, Max Gunther, traveling in that vicinity. According to the Arab's account, the papyrus had been discovored fourteen years previously, by a man since dead, between the bones of a mummy in a tomb of the Theban Necropolis.

Ebers hastened back to Leipzig with his precious roll, and deposited it for safe keeping in the university library in that city. And now, with the co-operation of an enterprising publisher, and the assistance of royal patronage, he places it at the disposal of the civilized world, by reproducing it in these handsome volumes.

The papyrus as received by Ebers, consisted of a single solidly-rolled sheet of yellow-brown papyrus, of finest quality, three-tenths of a meter wide, and a little more than twenty meters long. It formed one enormous book, but was divided into 110 pages, which were carefully numbered. For purposes of preservation and exhibition in convienient form, it has since been cut into several lengths. The writing, which is exceedingly clear and regular, is partly in black and partly in red ink, the latter occurring at the heads of sections and in the expression of weights and measures. The characters are known as Hieratic, being a cursive form of the hieroglyphic method of writing, and bearing the same relation to the latter that our ordinary written hand does to printed characters.

Hieratic script resulted from attempts to simplify the forms and outlines of the ideographic characters employed in hieroglyphic writing, which is essentially a combination of picture-writing with a phonic system. Hieroglyphics in ancient Egypt were the written language of the people, and hieratic writing was chiefly confined to the sacerdotal caste.

The Papyrus Ebers is so marvelously well preserved that not a single letter is lacking in the entire roll. The material of the papyrus itself, the inner bark of *Cyperus papyrus*, was examined by Prof. Schenck, professor of botany in the University at Leipzig, who established its identity with that of similar rolls, and pronounced it of remarkably good manufacture.

The age of the manuscript was determined by a consideration of three points; 1. Palæographic studies of the form of the written characters; 2. Occurrences of names of kings; 3. Examination of a calendar which occurs on the back of the first page. These data enable Ebers to assign the writing to the middle of the sixteenth century, or more precisely, 1552 B. C. Accepting the date—and it has been established beyond reasonable doubt—the writing was prior to the exodus of the Israelites; in fact, according to the commonly received chronology, Moses, in 1552 B. C., was just 21 years of age.

The authorship of this ancient treatise is not revealed, but it bears internal evidence of being one of the six Hermetic books on medicine named by Clement of Alexandria (200 A. D.) The Egytian priests, who were also the physicians, in order to give greater authority to their writings, were wont to ascribe them to their gods, and their codified medical knowledge was generally ascribed to the god Thut (or Thoth). In proof of this Ebers quotes the following passage from page 1, lines 8 and 9, of the papyrus in question:

"Ra pities the sick; his teacher is Thuti, who gives him speech, who makes this book and gives the instruction to scholars and to physicians in their succession."

This god Thuti, also written Thoth and Taant, is the famous Hermes Trismegistus of the Greeks, the same who was regarded by the alchemists of the middle ages with superstitious reverence as the father of alchemy. However this may be, historians accord in representing Hermes as the inventor of arts and sciences, and that he first taught the Egyptians writing, invented arithmetic, geometry, astronomy and music; gave laws to the people, and regulated their religious ceremonies. At the time of Jamblichus, A. D. 363, the priests of Egypt showed 42 books which they attributed to Hermes (Thuti). Of these, according to that author, 36 contained the history of all human knowledge; the last six treated of anatomy, of disease, of affections of the eye, instruments of surgery and of medicines. The Papyrus Ebers is indisputably one of these ancient Hermetic works. A study of the synopsis of the contents given in part below will justify this belief.

The recipes and prescriptions contained in the treatise are evidently collected from various sources, some of them being quoted from still more ancient writings. It bears internal evidence of having been used in the healing art, for the word "good" occurs in the margin in several places, written in a different handwriting than the body of the work and with lighter colored ink. Ebers thinks the compilation was made by the college of priests at Thebes, basing his conjecture partly on the locality in which it was discovered.

Ebers gives a synopsis of the contents of the entire work and a literal translation of the first two pages of the roll, reserving a fuller translation with commentary for a future publication. A hieroglyphic translation of a portion of the Hieratic manuscript also accompanies the plates; the latter, 107 in number, are faithful and beautiful reproductions of the original papyrus in the same yellow-brown color. The second volume contains a hieroglyphic Latin glossary by Stern and the remainder of the plates. Before proceeding to give details of its contents, one more peculiarity is worth mentioning. Though the pages are carefully numbered, the figures 28 and 29 are omitted, while the text is continuous. Ebers conjectures that the writer accidently forgot his count or abstained from using these numbers for superstitious reasons.

As already remarked, the work is divided into chapters or sections. A fair insight into the character of the treatise may be obtained from the selected headings of sections and extracts here following:

Headings of selected chapters. The numbers refer to the pages of the payrus:

1. Of the preparation of medicines.

25. Of salves for removing the *uhan*.

47. Catalogue of the various uses of the *Tequem* tree.

48, Medicines for alleviating the accumulation of urine and diseases of the abdomen.

55. The book of the eyes.

65. Medicaments for preventing the hair turning gray, and for the treatment of the hair.

66. Medicines for forcing the growth of the hair.

79. Salves for strengthening the nerves and medicines for healing the nerves.

85. Medicine for curing diseases of the tongue.

89. Medicines for removal of lice and fleas.

91. Medicine for ears hard of hearing.

99. The secret book of the physician. The science of the beating of the heart and the knowledge of the heart as taught by the priestly physician Nebsecht.

Verily: "There is no new thing under the sun." Chapters 65, 66, 79 and 89 show that hair invigorators, hair dyes, pain-killers and flea powders were desiderata 3,400 years ago.

Ebers encountered immense difficulties in the work of deciphering this papyrus on account of the large number of technical terms. As an example of the obstacles met, he gives the following literal translation of a diagnosis beginning on Plate xxxvi., line 4:

"Rules for the *re-het*, that is, suffering in the pit of the stomach. (Pylorus or cardia.) When thou findest anybody with a hardening of his *re-het*, and when eating he feels a pressure in his bowels (*chet*), his stomach (*het*) is swollen and he feels ill while walking, like one who is suffering from heat in the back, *tau nu peht*, then look at him when he is lying outstretched, and if thou findest his bowels hot and hardening in his *re-het*, then say to thyself this is a liver complaint, *sepu pu n merest.* Then make thyself a remedy according to the secrets in botanical knowledge from the plant *pa chestet* and from scraps of dates. Mix it and put it in water. The patient may drink it on four mornings to purge his body. If after that thou findest both sides of the bowels (*chet*), namely, the right one hot, and the left one cool, then say of it: That is bile. Look at him again, and if you find his bowels entirely cold, then say to thyself: His liver (?) *merest* is cleaned and purified: he has taken the medicine *sep nef sep,* the medicine has taken effect."

In view of the direction to look at the patient "when lying outstretched," it is curions to note that (according to Dunglison) the priestly physicians of Egypt are said by Diodorus to have formed their diagnosis principally on the position which the patient assumed in bed.

The following is the translation of the first four lines of Plate 1:

The book begins with the preparation of the medicines for all portions of the body of a patient. I came from Heliopolis with the great ones from *Het aat*, the lords of protection, the masters of eternity and salvation. I came from Sais with the mother godesses, who extended to me protection. The lord of the universe told me how to free the gods from all murderous diseases.

The work abounds in prescriptions, of which the following are samples.

Beginning of the Book of Medicines. To remove illness from the stomach. Rub up the seed of the *thehui* plant with vinegar and give the patient to drink.

The same for sick bowels.

Caraway seed	1-64 dram.
Goose fat	⅛ dram.
Milk	1 tenat.

Boil, stir and eat.

The same:

Pomegranate seed	⅛ dram.
Sycamore fruit (?)	⅛ dram.
Beer	1 tenat.

Treat as above.

In the original the arrangement of the substance and quantities in two columns is the same as here given. The weights are written in red ink. Other prescriptions contain reference to pills made by mixing certain substances with honey and rolling them into little balls. The weights and measures in this unique work deserve a longer notice than space will permit. Certain characters with dots above them represent weights, and a series of special signs indicate measures of volume. The unit of weight employed is believed by Ebers to bear a close relation to the later Arabic dirhem, or dram, which is equivalent to about 48 English grains. But owing to the smallness of the quantities given in the prescriptions, the unit is probably double the dram in value. This unit is represented in hieroglyphics by a spindle-shaped figure, and divisions of this unit into eights, sixteenths, thirty-seconds and sixty-fourths were indicated by arbitrary dots and other characters placed beneath the sign of the unit, in certain positions; the fractions 1/8, 1-16, 1-32, 1-64 always recurring, and 1-10 predominating; a quartenary arrangement which was superstitiously regarded as beneficial.

The unit of volume is thought to be the *tenat*, which is equivalent to six-tenths of a liter. This unit and its subdivisions are represented in the Hieratic script by arbitrary signs. When equal parts of the components of a prescription are taken, the fact is indicated by a light short vertical dash placed opposite each substance.

Ebers states in his Preface that notwithstanding there are to be found in this wonderful work many incantations and conjurations from which the priestly physicians could not abstain, still there is no hocus-pocus or gibberish in it. On the contrary, it shows that it was possible to write in the sixteenth century, B. C., complex recipes, and that they understood how to administer with care the medicines prescribed. Moreover, sorcery was forbidden in the ancient times in the strongest manner, and the alchemistic magi were punished in the reign of Rameses III. with death. The art of the physician was lost in the post-Christian era; science became more and more tinged with magic, and was gradually obscured and degraded by it.

The librarian of the Astor library says, with reference to the intrinsic value of this papyrus: "It is hardly possible to exaggerate the literary, scientific and historical importance of this remarkable document. It is the largest, best preserved and most legible text in the language of hieroglyphics, and does not speak vaguely of incomprehensible and fantastic ideas, but furnishes indubitable insight into different phases of the life of the ancient Egyptians."

HEMLOCK OR SPRUCE "GUM."

Under the incorrect name of Hemlock or Spruce Gum, considerable quantities of an exudation from the Hemlock or Hemlock Spruce, (*Abies Canadensis*), are annually sold. We say incorrect name, as the article is in no sense a gum, but is properly a turpentine, consisting of a resin and a small proportion of volatile oil. It is similar in its nature to the white turpentine which exudes from the southern pine, but having less oil, is much harder. It is also called Canada pitch. The hemlock is well known as one of the most beautiful of our native evergreens; it is abundant along our northern borders, and especially so in Canada; its lumber, though of a coarse kind, is largely consumed for various purposes. The hemlock while growing contains very little resinous juice, and the lumber is very free from it, but when the tree from any cause begins to decay, the turpentine or "gum" appears upon the surface in nodules, some of which are the size of a walnut or smaller, while others are as large as a hen's egg. It is a very common thing among young persons who live where the hemlock abounds, to get into the habit of gum chewing; the orientals use mastic for strengthening the gums and perfuming the breath, and it is possible the use of chewing-gum originated in some such notion. The chewing-gum of a few years ago was this turpentine of the hemlock, or spruce gum, refined, but this has latterly been superseded by paraffine, which is a white wax-like product of petroleum or coal-oil. The resinous product yielded by the Norway spruce in its native forests, is known in this country as Burgundy pitch, and is much used for making a stimulating plaster; the hemlock pitch is also used for the same purpose, and very closely resembles the imported article in its effects. In one way and another the article finds a sale at prices which make it worth while for those who live near hemlock forests to collect the "gum," as it is always called by the country people. Early in the fall or late in the summer, after the haying is over, some of the farmers go "a gumming," as it is styled; they go to the woods, where they erect a log shanty, and proceed to collect the gum for the market. A long pole is provided, below the tip of which is fastened a circular box or receptacle, generally the leg of a boot, kept in shape by a circular piece of wood through which the end of the pole projects; on the end of the pole is fastened a chisel. Having a satchel slung over his shoulder, the collector proceeds in search of gum-bearing trees, and when found, uses the implement. The gum detached by the chisel falls into the box beneath, and from this it is transferred from time to time to the satchel or haversack. These receptacles are empted into a large bag, and when this is full it is taken to the log hut. During rainy days, evenings and at odd times, the gum is freed from twigs, bits of bark, and other impurities, and made ready for market. The collecting of gum is sometimes very profitable; in some cases over $2,000 having been realized by two men in a single season, but such returns are exceptional. The season lasts until the weather becomes too cold to work in, when the camp is broken up.

RECTIFIED SPIRIT.

(*Spiritus Frumenti Rectificatus.*)

BY ADOLPH W. MILLER, M. D., PH. D.

Pure rectified spirit does not appear to have, so far, received much attention from physicians and pharmacists, though it possesses certain merits and advantages which eminently entitle it to a more careful consideration. As the term may be somewhat unfamiliar, or may sound indefinite and ambiguous to those who are unaccustomed to the liquor merchants' phraseology, it may be as well first to define the title of the present paper. French Spirit, Sweet Liquor and Rectified Spirits are synonyms current among the liquor trade, and used to designate pure rectified whisky, entirely free from the so-called fusel oils, coloring matter, and other impurities. It is obtained by slowly percolating the ordinary raw corn whisky or high-wine through fresh, crushed pine or maple charcoal, for which privilege the Government exacts from the rectifier an annual tax of $200.00. The more dilute the spirit is, the more readily does charcoal absorb and retain the flavoring bodies, while strong alcohol will, on the contrary, redissolve and remove them from the charcoal. Rectified spirit is reckoned among the regular stock of the wholesale liquor dealer. It is generally met with containing exactly 50 per cent. of absolute alcohol by volume, which strength is technically termed *first proof*, or 100 degrees. It is the basis used by the compounders of fancy liquors for their cordials, bitters, ratafias and *cremes*, the diluent of their pure imported brandies, the chief ingredient of domestic gins, brandies and rums, as well as one of the main components of flavored sweet wines, such as cherry, blackberry, ginger and the so-called Lisbon wine. Incidentally, it may be remarked that rectified spirit is much better adapted for the preparation of bay rum than the ordinary diluted alcohol, which is occasionally employed for this purpose.

All the various fusel oils, in a concentrated form, have peculiarly penetrating, oppressive and unpleasant odors, which to many persons are positively disgusting. They frequently bring on violent attacks of coughing, and they are also apt to produce headache, vertigo, nausea and stupor. Dr. Franklin B. Bache, in the "Dispensatory," says that amylic alcohol is an active, irritant poison, an assertion in which all the authorities seem to agree. Still, it is on these very bodies, their relative proportion and admixture, that the distinctive flavor of different liquors depends, which are so highly esteemed amongst connoisseurs, and for which such almost fabulous prices are often paid. Age, no doubt, alters a small portion of the fusel oil, but the greater portion remains, being much less volatile than the spirit. Considerable obscurity is, in fact, still attached to the changes which occur in liquors as a result of age. It is but reasonable to suppose, however, that these are all due to a very slow and gradual oxidation, resulting in the formation of an extensive series of complex ethers. In an able paper read before the American Pharmaceutical Association, in 1864, Prof. Maisch states that he regards the determination of the amount of acetic acid as a good means for ascertaining approximately the age of brandy and whisky, having found it to increase in proportion to the number of years during which the liquor had been stored. Butyric and valerianic acids, the latter formed by the oxidation of amylic alcohol, are also frequently present in distilled spirits. Propylic, butyric, amylic, capronylic, œnanthylic, and other alcohols have been recognized in different varieties of fusel oil, justifying the common acceptation of this term as a generic rather than as a specific name. Very probably minute traces of the entire series of these alcohols form odorous and fragrant ethers with the acids named above and perhaps also others, and thus give origin to those highly-prized spirituous bouquets. It is well known that an elevated temperature expedites these changes, so that whiskies are now almost universally stored in heated warehouses, whereby the time requisite for their proper ripening or "mellowing down," is reduced to a moiety. Yet, after all, it is the much-decried fusel oil and its derivatives on which the true flavor depends. When this is all removed, there is left simply rectified spirit, no matter how old or how valuable the liquor was previously.

The high therapeutic value of alcohol in disease is disputed by none, unless it be a small band of total abstinence fanatics, who strive, as Prof. Stille expresses it, for a cause intrinsically good, but sadly injured by its too zealous advocates. But it remains yet to be established that the medical virtue of spirit is increased or enhanced to the smallest degree by the costly flavors which characterize the choicest Cognac, the most indubitable Jamaica rum, or the most renowned Rye and Bourbon. If fusel oil deserves but a tithe of the opprobium constantly heaped upon it, we are bound to admit that the more perfectly it is eliminated from any spirituous liquor, the more suitable such spirit is for exhibition in medicine. We possess, in the plain, rectified spirit described above, a liquor of almost absolute purity, which deserves to be regarded as the type of a simple arterial stimulant. It can be obtained everywhere with facility, of standard and uniform strength, and at a fraction of the price of the fancy flavored liquors.

In order to prevent any misunderstanding, it may be as well to interpolate that the writer does not share the popular prejudice against fusel oil, as the quantity existing in liquor, not over one part in five hundred, and perhaps much less, is altogether too trifling to seriously modify the action of the alcohol. From its vast preponderance, it is this body alone that is responsible for the endless moral and physical miseries resulting from the excessive and even from only the habitual indulgence in strong drink. Delirium tremens, which generally first suggests itself, is only one of the sequelæ of the daily use of alcohol, which begin with disturbance of the digestion and go on to cirrhosis of the liver, methomania, fatty degeneration of the heart, atheroma of the arteries, Bright's disease, general poisoning of the blood, gradual alteration in the nutrition of the great organs, and finally the breaking down of the entire system. The anathemas which are, with the flimsiest of sophistry, hurled upon fusel oil and other flavors, should be directed towards the alcohol pure and simple in every form of distilled spirit that is used as a convivial or inebriating beverage, and thus perverted from its legitimate function of succoring the enfeebled system when it is most sorely distressed by agonizing pain or exhausting disease. So high an authority as the venerable Dr. George B. Wood says, in his "Therapeutics," that there is little difference between brandy, rum or whisky in relation to the effects of the alcohol; that medicinally it is of but little importance that the different forms of ardent spirits are now frequently prepared artificially, by first obtaining rectified spirit free from fusel oil, then reducing this with water to the requisite strength, and finally giving the desired color and flavor by suitable additions. Dr. Ure gives a formula for a manufactured brandy which he says "may be reckoned as wholesome as alcohol in any shape can ever be." Our late lamented friend, Prof. Parrish, in a paper read at the meeting of the American Pharmaceutical Association, in 1864, distinctly advocates the plan "of making brandy for ourselves, as there is no merit in having it imported." He says, further: "We should set about substituting the variable, uncertain, adulterated brandy of commerce by a definite liquor of the same alcoholic strength as the standard specimens, and with a new and appropriate name."

While admitting that, considering the relative proportions, the flavors used are infinitely less injurious than the spirit to which they are added, it can not be denied that the liquor merchant derives a very considerable share of his profits from the mystic art of compounding. It has been shown, ***ad nauseam***, that all sorts of queer, if not positively disgusting, substances are added to tickle the palates of the devotees of the grog-shop and gin-mill, as well as those of the more fastidious ***habitues*** of fashionable bar-rooms. Even some of the most confirmed topers may be somewhat startled if they learn that they are occasionally imbibing small doses of methylic ether, cocoa-nut oil, which, to many persons gifted with an acute olfactory sense, is unpleasantly suggestive of negro perspiration, creosote, artificial benzoic acid, obtained from the draining of the stable, tar, butyric acid and ether, produced by the aid of decaying cheese or putrefying meat, sulphuric acid, tannic acid, aqua ammoniæ, glycerin, elderberry juice, formic ether, acetic acid, tinctures of Russia leather, Cayenne pepper, pellitory root, green tea, star anise, oak bark, dried peaches, grains of paradise, Quillaya bark, and many others.

Unless we are gifted with an imperturbable faith in the homœopathic doctrine of increase of strength with the division of the dose, we shall be forced to conclude that whatever effect, for good or for evil, the flavoring substances of liquors may possess must be entirely obliterated by that of the vast excess of alcohol with which they are combined. Still, these very flavors are relished by the consumers, as is best attested by the very high prices constantly paid for favorite brands. The chief point of interest to us, however, is the uniform therapeutic effect of the flavored and the natural liquors.

Raw corn whisky or high-wine, such as is used for the manufacture of alcohol, is undoubtedly strictly pure, as there is no incentive whatever to its adulteration. Nevertheless, many vile epithets, such as Jersey lightning, rot-gut, etc., are heaped upon this, simply because it is lacking in smoothness, oiliness and body; so that it meets with little favor among those who are sufficiently familiar with it to recognize at once its want of age.

In the asthenic forms of many diseases it is of prime and often even of vital importance to administer alcohol. Nothing as yet known so well substitutes the functions of food, and thus bridges over the chasm of greatest prostration, during which the system would otherwise inevitably succumb. The dictum of Prof. Henry Hartshorne is to the effect that when alcohol is used only in actual need, and to the extent of that need, there is no inherent tendency towards its excessive use subsequently; that its tendency to inebriate is due only to an excess, though *in perfect health every drop is an excess*. While we can not and dare not dispense altogether with a drug of such inestimable value, what is there to be gained by running the unnecessary risk of inculcating a taste for the truly fragrant bouquets of choice French brandy, or the almost equally precious old Kentucky Bourbon? We can well afford to dispense with this meretricious and alluring *hautgout* of liquors, which, even in their purest state, are but too apt to win boon companions, ready and willing to follow their enticing solicitations.

The economic aspect is another strong point in favor of the introduction of plain rectified spirit into use as an officinal medicine. Why should the poor day-laborer, suffering, perhaps, from typhoid fever, or, it may be pulmonary phthisis, be compelled to devote his entire compensation for two or three days of hard toil to the purchase of a bottle of pure imported brandy, when the value of an equal amount of pure spirit, from which he will derive quite as much benefit, can be earned by him in as many hours?

We may sum up as follows: Rectified spirit is almost always strictly pure, while the more expensive liquors invariably contain fusel oils, and very frequently other impurities. The current market price of rectified spirit at present is from $1.25 to $1.50 per gallon, that of fancy flavored liquors ranging from $2.50 to $12.00. While the taste and odor of rectified spirit is not so tempting as that of the choice cabinet liquors, it is entirely free from the disgusting smell and flavor of the ordinary diluted alcohol. It has not yet been established that therapeutically the more expensive liquors are in any way superior to rectified spirit, or that their physiological action presents tangible points of difference.

In view of the above statements, the earnest attention of the next Committee on the Revision of the National "Pharmacopœia" is respectfully invited to the propriety of expunging *Spiritus Frumenti* and *Spiritus Vini Gallici* from the officinal list; also to the introduction of *Spiritus Frumenti rectificatus,* defined as grain spirit, freed from fusel oil and other impurities by percolation through charcoal, and containing 50 per cent. of alcohol.

The two officinal wines have recently again been shown to be very largely adulterated abroad, so that it is probably impossible to obtain in this country either Port or Sherry consisting entirely of the juice of the grape. Port wine is stated to be mixed with an equal bulk of elderberry juice and a considerable portion of alcohol before leaving Portugal. Sherry and Maderia are openly imitated, and manufactured out of the *vins ordinaires* of Cette and Mezes, in France, and the parties engaged in this industry feel so proud of the abundant success of their enterprise that they even invited the National Viticultural Congress to inspect their establishments. On account of the constant admixture and sophistication of these wines, it may also prove necessary, or at least highly advantageous, to dismiss these from our "Pharmacopœia," and to substitute in lieu thereof the more reliable wines of the Rhine, the *Vinum generosum album and rubrum,* officinal in Germany, which can be procured in a pure and undiluted form without much difficulty.—*American Journal of Pharmacy.*

ON REMOVING GREASE SPOTS AND STAINS FROM CLOTHING, DRESSES AND FABRICS.

(CONCLUDED FROM PAGE 332.)

Dresses or ribbons with the above named colors should either be washed alone or with darker colored goods, or else it will affect the purity of the lighter shades that happen to be in contact. After the goods have been cleansed and extracted, they are hung for two hours in a well ventilated place, and afterward for one hour in a heated room, to thoroughly remove the smell by the volatilization of the benzine. The goods must be well inspected now, and grease and other spots that are dissolved by the benzine, but are still visible, must be rubbed with the fingers and brushed with warm water quickly, and the moisture removed by a clean, dry woolen flannel. The wet patches are then dusted with plaster of Paris, which, after being dried, is removed with a brush. Silks are treated by spreading them on a woolen cloth, and slightly rubbing with a fine woolen rag, being careful not to get scabby patches from rough handling. Red borders or trimmings are moistened with a solution of nitrate of tin; blues with aqua ammonia; greens with acetic acid. Tar and oil color spots are first rubbed with butter that should be left on for a few days and then washed away with ether, and afterwards with benzine. Spots caused by oxide of iron can be dotted out by a solution of oxalic acid, and finally brushed with water. Some other stains, if on white fabric, are to be considered in this class. The vegetable juices which, besides the acids they contain, and which act on colors so as to modify the shade or destroy it, contain substances that act tinctorially on the fibres. Some of these, if quite fresh, can be washed away with water; but if dried and of long standing, require other means. Of the bleaching agents, sulphurous acid, chlorine and ozone, sulphurous acid is mostly applied to woolens. It is a product of the combustion of sulphur in air, sulphurous oxide So_2 being formed. It can be prepared by burning sulphur by the application of heat. It is a colorless gas of specific gravity 2·24, (air being 1). At 10° it condenses to a thin, colorless liquid. It is freely soluble in water, one volume of which dissolves at 0 °C., 68, and at 20 °C., 36 volumes of this gas. It is obvious from this that the gas must be applied directly or absorbed by water of the lowest possible temperature. It destroys vegetable colors apparently by forming a direct compound with them. Chlorine can be applied also dissolved in water of which one volume dissolves three of the gas at a temperature of 10 °C., or as calcium hypochlorite, the so called bleaching powder. It is not a direct bleaching agent, for it owes its property to its attraction for hydrogen. Active chlorine decomposes water, and the oxygen, set free, forms ozone, that destroys the vegetable coloring matter. Mineral colors are not affected by it. Oxygen is capable of existing in a passive and active state; the active condition, called ozone, is the bleaching agent named above. It is only oxygen in a condensed state, three atoms occupying the volume occupied by two in the passive state. It is formed by physical and chemical methods, such as by heating a spiral of platinum wire in air, by the action of sunlight on the essential oils and growing plants, and by electric discharges through oxygen. It can be prepared chemically by the action of sulphuric acid on barium peroxide and potassium permanganate. It is the active agent in the old bleaching methods where the fabric is laid on the green sod, and the fact that it bleaches faster on frequently occurring thunder storms can be attributed to ozone formed by the electric discharges.

Other spots are met with caused by rust or ink. They are of two kinds. The ferrous oxide is of a darker color, and can be removed by the mineral acids (hydrochloric or sulphuric); if the spot is old and yellow, the iron is more oxidized, and a more powerful agent, oxalic acid, must be applied; its action can be re-enforced by a chemical having great affinity for oxygen and capable of reducing the ferric to ferrous oxide. Oxalic acid is powdered on the spot, and moistened with a solution of tin-salt (one part of the salt to about five of water) and the spot will disappear. The latter treatment is only necessary on obstinate spots.

It is necessary to make a few general remarks regarding all these operations. These spots, if removed by unskilled or careless hands, remain as patches, leaving a margin or border. The solvents should be applied from the center of the stain; each application should be rubbed with a clean piece of linen, always enlarging the circle till the last application leaves no trace of the spot; then thoroughly rinse with water or alcohol, as required.

We now have to consider the second class of stains, those caused by substances that act chemically on the fibre and colors so as to modify the same, or entirely destroy them. Some of these stains can not be removed so as to leave the color of the fabric in its original state. In this case the color of the whole piece must be removed and re-dyed; or, if this does not suit, the color must be produced on the spot. This latter art is very seldom practiced, and can be done only by the experienced dyer, one having more knowledge than to be able to dye from a given sample and recipe; for the operator must not only understand the properties of the removing agent, but also how all colors are composed. These stains are caused by the acids, alkalies, the astringent juices of plants, and many other substances. These acids redden the blacks, browns, logwood blues, violets, and the fancy colors, or, in general, all colors made by archil, astringent dye-stuffs on a ferrous preparation. They destroy bright yellow colors, and hence convert green into blue on woolen goods. The more intense yellows, made by quercitron and Persian berries, are more resistent; scarlets and rose are brightened by acids. Strong acids turn colors made by redwood a cherry-red, and cochineal scarlets more orange. Not all acids have the same action; the mineral acids destroy most colors, while the organic acids only modify the shade. Urine, if fresh, also acts in a similar manner, forming a dirty yellow tint on these colors; if old and putrified, this action is neutralized and prevented by the ammonia formed. It then acts like the alkalies, which turn red, made by cochineal and redwood, violet; safflower is completely destroyed. Some blues are also affected by these agents, and greens consequently turned yellow. Colors made by annatto are turned yellow or pink; violets are darkened, except aniline. These colors have a tendency to fade under the action of alkalies. The astringent principles of plants cause stains that are easily removed on a white ground; but on colored goods they will modify all colors made by vegetable pigments, or those into whose composition iron has entered. They must be removed by the bleaching agents. Sulphurous acid should first be applied, for it acts not so destructive on the colors; but if chlorine must be resorted to, all but the mineral colors will fade. The acids and alkalies are used to mutually neutralize their effect on colors, and in general, ammonia is applied against acids, for it has a less injurious effect on the fibres than the other alkalies. Whatever acid be used, it should be diluted and used carefully. A good composition to remove stains caused by sweat or alkalies on scarlets, is made by dissolving tin in nitric acid, and diluting with water.

It only remains to make a few remarks regarding the reproduction of colors on spots which have been removed by the bleaching methed. In this case the spot must be re-dyed just as a whole piece would be treated; only the mordants and dissolved dye-stuffs are applied in a more concentrated form, and each application rubbed with a clean linen rag moistened with ether. In these operations the greatest cleanliness and accuracy should be observed, or a margin will be left on the fabric, the appearance of which is nearly unbearable, and may be called a positive daub.

OLEO-PARAFFIN—A SUBSTITUTE FOR LARD IN OINTMENTS.

BY JAMES F. BABCOCK.

The use of lard as a basis for ointments and cerates has always been a source of trouble to pharmacists. Good lard, suitable for pharmaceutical uses, not being always easy to obtain, most pharmacists at the present time prepare their own, by frying out leaf lard. This is generally a long and tedious operation, and the product obtained, even where great care is used in its preparation, not unfrequently disappoints the operator, by becoming rancid in a few weeks or months, according to conditions which are imperfectly understood, or, at least, incapable of control.

The purpose of the present paper is to suggest a substitute for lard as a basis for ointments and cerates, which, while it has the cheapness of lard, is purer, cleaner, not so liable to become rancid, and yields a much handsomer product.

Perfectly pure fatty bodies or glycerides, as stearin, olein, margarin, etc., or mixtures of them, do not become rancid; but the changes which constitute rancidity are due to the presence of foreign matters of an albuminoid character, derived from cellular tissue of the plant or animal from which the fatty substance has been obtained.

These albuminoid substances act as ferments, and, under the influence of moist air, absorb oxygen, undergo decomposition, and influence a change in a small quantity of the fatty bodies in their immediate vicinity. The fatty acids are set free, and these by oxidation produce minute traces of butyric, caproic and other volatile bodies having a disagreeable odor.

The secret, then, of preserving lard, ointments, or other fatty bodies, consists simply in making them *as pure as possible;* but as the preparation of lard so that it shall be quite free from the albuminous substances, which cause the trouble, is extremely difficult and always uncertain, we propose a kind of artificial lard, prepared from materials which closely resemble the components of natural lard, and may always be obtained in a state of great purity.

Ordinary lard contains about 62 per cent. of fluid fat called oleine, and 38 per cent. of a mixture of various other fatty bodies, solid at ordinary temperatures, containing stearin, margarin, etc.

The fluid portion of lard—oleine, or lard-oil, as it is called in commerce—is produced in immense quantities in all of the principal cities of the North and West. It is used for lubricating purposes, for oiling wool, for illumination and many other purposes. It is moderate in price, varying from 60 to 90 cents per gallon. What is known as "Extra" or "No. 1" lard-oil is very light colored, free from disagreeable odor, and keeps well for almost any length of time. This oil is cold-pressed from the lard, and is generally quite free from those impurities which are found in leaf-lard, and if of good quality does not readily become rancid.

The writer has in his possession samples of lard-oil which are about a year and a half old, and still perfectly sweet.

Extra No. 1 lard-oil is admirably suited for the preparation of artificial lard.

To represent the solid portions of lard, we propose paraffin—a body of great commercial purity, of moderate price, and well adapted to replace the stearin in lard, as it already has, to a great extent, replaced it in the manufacture of candles.

Pharmacists have hitherto made but little use of paraffin, because this substance, though perfectly miscible with oils when melted, separates in crystalline scales on cooling, in consequence of which its use has been abandoned as impracticable.

This difficulty may, however, be almost wholly overcome, so that paraffin may be used as a substitute for wax in ointments, for spermaceti in cold-cream, for stearin in artificial lard; the tendency to separate being obviated by the addition of about one part of wax to every nine parts of paraffin used.

This suggestion was made by the writer in a paper presented to the Amer. Pharm. Association and published in the Proceedings for 1867, and also by Carney, some years previous, but it appears to have been unacted upon.

Very fine results in cerates and ointments are obtained by the use of a wax substitute compsosed of paraffin three parts and wax one part; these substances being melted together and poured into a suitable mould.

Lard-oil or the oleine of lard, and the wax substitute composed of wax and paraffin, as above, which represents the stearin, when melted together in the proper proportions, and stirred until cool, yield a product closely resembling lard in its external appearance, and having about the same melting point, but possessing the great advantage that this product, though of the same consistence as lard, can be prepared in such a manner as to contain about 75 per cent. of oleine, instead of 62, as in lard, thus producing an ointment which is much more readily absorbed. The paraffin does not crystallize, but, while it gives consistence, produces a peculiar and beautiful whiteness in the product, like that due to the presence of spermaceti in cold-cream.

This substitute for lard, which we may call oleo-paraffin, is prepared as follows: Take of

Lard-oil	15 Troy ozs.
Paraffin	3 Troy ozs.
Wax	1 Troy oz.

Melt the articles at a gentle heat, and when melted, stir until cool.

Oleo-paraffin, as thus prepared, is an excellent substitute for lard, and being produced from substances which are not liable to change, does not readily grow rancid, and does not require to be benzoinated.

To prepare simple ointment, eight parts of oleo-paraffin are melted with two parts of wax, and for simple cerate, eight parts of oleo-paraffin are melted with four parts of wax, as in the processes of the U. S. Pharmacopæia.

Oleo-paraffin may be kept on hand like lard, or may be prepared every week or two, as required.

The writer believes that oleo-paraffin may be used as a substitute for lard for all pharmaceutical purposes, without the objections attending the latter; the formulas given above may be varied for different seasons of the year, or to meet various conditions, and are offered as a suggestion for further experiments rather than as expressing the best possible proportions.—*The Laboratory.*

THIRTEENTH ANNUAL REPORT OF THE GOVERNMENT CINCHONA PLANTATIONS IN BRITISH SIKHIM.

BY GEORGE KING, ESQ., M.B., F.L.S.

Superintendent, Royal Botanical Garden, Calcutta, and in charge of Cinchona cultivation in Bengal.

1. As Government are aware, the plantations consist practically of the two sorts of cinchona trees, yielding the barks respectively known as red and yellow. The cultivation of the species producing gray, and crown bark has been abandoned; gray bark being so poor in the more valuable alkaloids, and the crown bark tree, although at one time it promised well, having ultimately proved unsuitable to the climate of Sikhim.

2. During the past year, the older red bark trees have been on the whole healthy, and their growth has been fairly good. The younger plantations in the better soil and climate of the lower part of the valley are looking extremely well, and in many places the growth has been very luxuriant indeed. The number of red bark trees planted out during the year is 310,000, bringing the total number in the permanent plantation up to 2,390,000. These 310,000 represent young plants put into the ground in extension of the permanent plantation, and do not include the numerous plants required to fill the vacancies in the older parts of the plantation caused by death and accident. There are, besides, a large number of seedlings in the nurseries, and a quantity of seed has been sown; large extensions will therefore be made before the end of the year that has now been entered on, the Secretary of State having directed the more extensive cultivation of this species.

3. To the yellow bark plantation 60,000 plants have been added during the year. The total number is now therefore 354,000 young trees, exclusive of the stock in the nursery beds. As I have mentioned in former reports, this species did not for a long time seed freely in Sikhim. During the last two years, however, a considerable quantity of seed was produced, and this was carefully saved, care being taken to collect only from the varieties which Mr. Wood's analysis showed to yield the best quality of bark. It has long been suspected that *calisaya* is, in the language of gardeners, rather liable to spot; in other words, that seeds taken from the same tree often produce plants very dissimilar to their parents, and also to each other, in habit and shape of leaf. Mr. Wood's analysis, and also those of Mr. Broughton, go to prove that difference in these respects

is accompanied by difference in the chemical composition of the bark. Of six varieties of our *calisaya* analyzed during the year by Mr. Wood, one was found to contain as much as 7·4 per cent. of total alkaloid, of which 6·2 were of crystalline sulphate of quinine; while a third specimen gave so poor a result as 1·6 per cent. of total alkaloid, of which no part was quinine. The seed saved from the finer sorts was carefully collected and sown. It produced, however, a large proportion of seedlings with such unmistakable resemblance to the worst varieties, that it was decided not to plant out any of them, and in future to trust to propagation by cuttings alone for any extensions which may be made in our plantations of this species.

4. A third species, referred to in former reports as a "hybrid," having been found to yield a bark rich in alkaloid, and being of vigorous growth, has received attention; and since last year the number of plants in permanent plantation has been increased from 6,000 to 21,000; there is, besides, a nursery stock of 23,000.

5. In round numbers, then, the Government cinchona property in Sikhim consists of three millions of red bark-trees, of half a million of other sorts, and of a nursery stock of about half a million plants. There is still much excellent land within the reserve well suited for cinchona; and as our nurseries are well stocked with young plants, especially of cinchona *succirubra,* considerable extensions can be undertaken without difficulty.

6. During the year some experiments were made in taking bark by Mr. McIvor's mossing process. This, as Government are aware, consists in partially denuding the trunk of a cinchona tree of its bark, and of applying moss to the denuded portion with the view of promoting a fresh formation of bark thereon. Sufficient time has not yet elapsed to allow me to report decidedly regarding the result, but it does not promise well. The soft newly forming bark proves highly attractive to ants, which are very numerous in Sikhim, and these insects in many cases removed much of it as fast as it was formed; moreover, in a good many cases no new bark whatever was formed over the wounds. Coppicing has been carried on to a considerable extent. This, although undertaken primarily as a means of thinning the plantations where that was necessary, has also served as an experiment in this method of harvesting the bark-crop.

The result has been satisfactory. It has confirmed our former experience that red bark trees in Sikhim shoot freely from their cut stumps, and that, if the resulting shoots are judiciously reduced in number, they grow with great rapidity and vigor.

7. From these thinnings, and also from some pruning operations, 39,405 pounds of dry bark have been obtained. Of this quantity 15,160 pounds have been made over to Mr. Wood, the Government Quinologist, and 4,047 pounds have been supplied to the Medical Storekeeper, Calcutta. The remainder is in stock, and will be made over to Mr. Wood, as he can manufacture it. In my last report I estimated 70,000 pounds of dry bark as the probable outturn for the year. The deficiency now reported is entirely due to the long-protracted and comparatively severe cold season, which necessitated the suspension of all cutting for an unusually long period of the year. For it has been the invariable experience on the

plantation that during cold weather the bark clings so tenaciously to the wood that great labor and loss are involved in removing it, whereas during warm and moist weather it is readily separable. But although not collected before the end of the financial year, and therefore not returnable as part of last year's produce, the 30,000 pounds by which the outturn falls short of the estimate were collected during the first month of the year now entered on. The estimated yield has therefore been substantially reached.

8. Several facts point to the conclusion that the time at which cinchona *succirubra* trees are most profitably cut for their bark is when they are about eight years old ; in other words, that red bark is an eight years' crop. The earliest year during which any considerable number of trees was planted in Sikhim is 1867. Prior to that, only a few trees had been put out. These trees of 1867 are now therefore in their eighth year. Moreover, the recently appointed quinologist has now settled on a cheap and efficient method of extracting the total febrifugal alkaloids from cinchona bark. The time appears now, therefore, to have arrived at which the plantation must begin to be worked on some systematic plan. As a basis for such a plan, an accurate survey of the area actually planted, and an estimate of the probable yield of bark per tree, become objects of much importance. The former is now being carried out by an officer of the Revenue Survey Department, who is located on the plantation, where he will remain until the work is finished. The calculation of the actual yield of bark per tree was undertaken by Mr. Wood, who has submitted a report on the subject, which is now before Government.

9. During the year now began I see no difficulty in furnishing 200,000 pounds of dry bark, but I think it would be better for the present to be guided as to the quantity harvested by the capabilities of the quinologist's factory than to fix any definite amount, and to insist on so much being taken. Bark does not improve by being stored; on the other hand, it increases in weight by being left on the trees until actually wanted for the factory.

10. Arrangements have been made for drying and storing the bark at Mungpoo, where also a number of tubs for carrying out Mr. Wood's process of extraction have been put up in position.

11. As mentioned in last report, some trees were treated with manure of different sorts. Mr. Wood has examined the bark of these, and reports regarding it as follows:

"The trees were planted out at Mungpoo in April, 1872. To one portion farm-yard manure was applied in June, 1873, and in June, 1874, sulphate of ammonia (3 oz. per plant) was applied to a second portion; guano (6 oz. per plant) to a third, and oil-cake (2 ℔ per plant) to a fourth portion; one patch remaining unmanured for comparison. Strips of bark were taken from the stems of a number of trees in each group in September, 1874, and the total alkaloid determined, with the following result:

" Bark from unmanured plants..............................	7·4	per cent. total alkaloid.
" trees manured with cattle-droppings.....	6·33	" "
" " " " fixed guano...........	6·68	" "
" " " " sulph. ammon........	7·27	" "
" " " " castor-oil cake.......	7·60	" "

"It will be seen that no appreciable effect had been produced upon the proportion of the alkaloid in the stem bark. But I do not think that any useful inference can be drawn from the result. If the manure will increase the growth of the tree, the effect will be nearly as valuable as if it had augumented the proportion of alkaloid within the bark. I would suggest, therefore, that the application of manure to this experimental patch should be repeated every second year; and when the trees are seven or eight years old, they should be cut down and the total result determined."

12. The budget allotment for the past year was Rs. 89,525, and the total expenditure was Rs. 60,280-4-6, being Rs. 48,229-8-6 on plantation account, and Rs. 12,050-12-0 drawn by the Quinologist. This shows a saving of Rs. 29,244-11-6. The largeness of the amount saved is due chiefly to the determination to incur no expense on factory buildings while Mr. Wood's experiments on a manufactory process were pending. Previously existing and temporary buildings were therefore used, any nothing new was erected. The sum of Rs. 2,820-14-0 was credited to the plantation for the 4,047 pounds of bark supplied to the Medical Storekeeper, and Rs. 700-12-6 of land revenue were paid into the Darjeeling treasury.

13. Seed to the following amount was distributed to various applicants during the year:

	Ozs.
C. Succirubra	280
B. Officinalis	50
C. Calisaya	18
Total	358

14. A beginning has at last been made in the manufacture of a cheap, efficient alkaloid, and the great object of Government in establishing these plantations appears on the point of realization. Mr. Wood's cinchona febrifuge is an amorphous powder of a very pale buff color, and entirely free from resin. It is readily soluble in water slightly acidulated with sulphuric acid. About thirty pounds of this powder were sent to the Surgeon-General, Indian Medical Department, during August and September. This quantity was distributed amongst four medical officers of much experience, for the purpose of being submitted by them to a comparison as regards febrifugal power with the sulphate of quinine in ordinary use. Their reports, which are understood to be highly favorable, are now, I believe, before Government. I may mention that this alkaloid has also been given, with the best results, to coolies suffering from fever both in the plantation in Sikhim and in the Botanical Garden, Calcutta. I have also had some given to villagers living outside the garden. In all cases I have found it an efficient febrifuge, and it is highly prized as such by the people who have been cured by it.

15. Mr. Biermann, the second gardener, returned from sick furlough to Europe in November, and Mr. Kennedy, who had been acting for Mr. Biermann, retired from Government service on the return of the latter.

16. In conclusion, I have to express my thanks to Mr. Gammie, the resident manager of the plantation, for his continued good service. My

acknowledgments are also due to Messrs. Biermann and Jeffrey for the way they have conducted their duties. Mr. Kennedy, although no longer a Government servant, also merits my thanks.

TRANSACTIONS OF PHARMACAL COLLEGES AND SOCIETIES.

CHICAGO DRUG CLERKS' ASSOCIATION.

A meeting of the Chicago Drug Clerks' Association was held at the rooms of the Chicago College of Pharmacy, Wednesday, Nov. 17, 1875, Vice-President Hugo Martin in the chair.

A communication was read from Henry S. Wellcome, Secretary of the New York Alumni Association of the Philadelphia College Pharmacy, which expressed greetings and sincere wishes for the success and usefulness of this organization.

An essay was read by Mr. C. F. Hartwig, on the U. S. Dispensatory, comparing it with the last revised edition of the U. S. Pharmacopœia. Mr. Hugo Martin, read a paper on Emulsions and Emulsifiers. Both papers were accepted with thanks to the writers.

On motion, the Secretary was instructed to request the editor of the PHARMACIST to cause the publication of the two papers, and also the one read at the previous meeting, by Mr. Frank Conrath, on Suppositories.

On motion, the meeting adjourned to meet again on the first Wednesday in December, 1875. C. F. HARTWIG, *Sec'y, pro tem.*

NEW YORK ALUMNI ASSOCIATION OF THE PHILADELPHIA COLLEGE OF PHARMACY.

The regular monthly meeting was held in Plimpton Hall, Tuesday evening, Nov. 2, Dr. Von Weber in the chair.

The Secretary announced the death of Jas. W. Hommann, one of the most active members of the Association. He died Monday, Oct. 25th, aged 22 years and 5 months. Was born in Green Bay, Wis., June 3d, 1853. His parents died while he was quite young, leaving him to provide for and educate himself. He apprenticed himself with "Hughes," apothecary, 8th and Race streets, Philadelphia, and graduated from Philadelphia College of Pharmacy in 1873, came to New York in spring of 1874, where he resided until his death. He was elected a member of the American Pharmaceutical Association at the last meeting in Boston. Mr. Hommann was a zealous student, and his accomplishments had led his friends to anticipate for him a brilliant career. Resolutions were adopted, expressing sympathy of the members, to be transmitted to his brother.

Fred. W. Latz was elected a member of the Association.

A communication from the Board of Trustees of the Philadelphia College of Pharmacy, recognizing the Association and offering greetings, with wishes for its prosperity and usefulness, was read by the Secretary.

Mr. Plummer read an interesting paper on salicylic acid, with which he has been conducting experiments for some time. He recommends glycerite of starch as the best medium for its local application. He finds it of little value for preserving infusions, etc., especially those containing much tannin, which he thinks interferes with its action. Mr. Wilson said that in a paper by Dr. Squibb, which was published last spring, he stated that if salicylic acid retarded the natural ferment and digestion in the stomach, it could not be properly administered, and asked if any information had been gained on that subject. Mr. Plummer stated that he thought no such action took place, and that it is being prescribed for internal use by many prominent physicians.

Mr. McElhenie read a paper on the vending of nostrums. It was called out by an editorial in the *Medical Record*, Oct. 9, under the title, "Shall It be a Profession or a Trade," crediting the present status of the nostrum traffic to the over-sensitive pocket nerve, and submitting that a peremptory refusal to handle medicines of unknown constituents is the only means likely to prove successful in abating their sale. Mr. McElhenie's paper elicited considerable discussion, and generally sustaining him in asserting that any rash act on the part of the pharmacist would rather tend to advertise and set the patent medicine traffic into some other channel, not only not decreasing their use, but losing that part of the necessary income and inconveniencing and displeasing many of the most valued patrons, as the sale of patent medicines is by no means confined to the uneducated and poorer classes. It was maintained that the use of those medicines could be more effectually discouraged by the pharmacist, while kept in his stock, by the exposure of their fraudulent claims when called upon to sell them. The plan of the popular *Health Almanac* was highly commended.

Mr. Wellcome exhibited some Glen Flora mineral water, from the spring at Waukegan, Ill., and which has gained an extended reputation for its direct action upon the kidneys. Its main constituents are the bicarbonates of magnesia, lime, soda and iron; also, a small amount of alumina and silica. He also presented some nitrite of amyl, in flat, flask-shaped, thin glass capsules, each containing ten minims, to be broken in the handkerchief, or cotton, for inhalation, a device of Dr. T. A. McBride, of this city. They seem very practical, and are something that has long been needed.

The next meeting will be held Tuesday evening, December 7.

H. S. WELLCOME, *Sec'y.*

DRUG CLERKS' ASSOCIATION OF THE CITY OF WASHINGTON, D. C.

The regular monthly meeting of the Drug Clerks' Association was held at the hall, Wednesday evening, Nov. 3, 1875, the President, W. T. Baldus, in the chair.

The minutes of the last meeting were read and approved.

The Secretary, Mr. C. S. Price, laid before the meeting a letter received from the Secretary of the Chicago Drug Clerks' Association, stating that the document had, by mistake, fallen into the hands of the Secretary of the National College of Pharmacy of this city, which caused some delay in answering it. The Association instructed the Secretary to place the letter on the Register's file and answer it immediately.

The President stated that the principal business before the meeting was the election of officers for the ensuing year, and, with *feeling*, remarked, "To-night closes the third annual year of our existence as a pharmaceutical body, and to the members of this organization let me return my sincere thanks for the many indulgences—that might not have been strictly in accord with your views—that I have taken advantage of. Still, I have, for the good of the Association, worked strenuously to imitate the fair example of my predecessors, and if I have not accomplished this object, I have endeavored to do so. In retiring from the chair, I shall still continue to work in this interest, and help to shape the glorious destiny of this organization, which has prospered from its foundation, and will always be found encouraging the noble profession we have adopted.

The Secretary submitted his report as follows, showing that the membership had increased fifteen; total number of active members, forty-eight; six had been dropped from the rolls, and one member expelled as incompetent; the expenses of the Association was $480, and receipts from all sources, $620, leaving a balance in the treasury of $140. His books, with those of the Treasurer's, were given to the Board of Directors, and they returned a report that the accounts as kept by the Treasurer and Secretary were correct. A vote of thanks was returned to the Secretary and Treasurer for the interest and efficient manner with which those gentlemen filled their offices. The Register submitted his report, which was received by the Association and approved.

The election of officers for the ensuing year resulted as follows: President, Robert P. Southall; Vice-President, John B. Gibbs; Secretary, Clarence R. Dufour; Treasurer, Benjamin Whiteside; Register, J. A. McCauly, M. D.; Board of Directors, R. P. Southall, C. R. Dufour, C. S. Price, F. A. Tschiffally and George R. Reynolds.

After the officers had been duly installed, the President, Mr. Southall, made a few happy remarks, closing by saying "that he hoped that all similar origanizations would place themselves in communication with our Association."

C. S. Price, *Secretary.*

EDITORIAL.

Several articles have appeared in medical journals, recently, on the subject of physicians becoming the dispensers of their own prescriptions in lieu of the druggist performing that duty. To us of the "guild" this seems an absurdity, growing out of avarice and envy of their more successful neighbors. There is little doubt that in many cases it comes from a brisk competition by some wide-awake homœopothist, who, of course, furnishes medicine (?) with his advice, and without extra charge. Some of our physicians think that this liberality secures homœopathy many of its victims, and that all which is needed to counteract this depletion is to furnish blue mass and rhubarb *free to all patrons.* No doubt some are so fond of medicine as to take more frequent and larger doses if *free of cost* to themselves; but the average human biped, we think, would prefer to pay rather than to swallow, and the reason for preferring homœopathy lies in some other direction rather than in the prices charged by doctor or druggist.

Recently there appeared, in the Louisville *Weekly Medical Journal,* an editorial on this subject which "outherods Herod." The doctor gravely proposes to ignore the pharmacist in the future, and dispense the prescription at the bed side, or, if that is not possible, then to have it dispensed by the office student from preparations furnished by the wholesale druggist.

The doctor evidently thinks the pharmacist is of no further use, since he alludes to the fact that in consequence of the improvements in the character of medicines and preparations the physician can now with great ease carry enough medicines in his pocket-case to furnish remedies to his patients. We wonder who has wrought this marked change in the materia medica? Can we thank our friends, the physicians, for improvements which render it possible to dismiss the apothecary with a request to "stand and deliver" their portion of blood money?

The doctor thinks that each physician loses from ten to fifteen hundred dollars per year which now goes to the druggist. We suggest that the earnings of the apothecary do not, by any hypothesis, belong to the doctor; and we do not see how one can lose what belongs to another. If increased gain is the only motive which inspires our friend, the doctor, we can point out other fields for conquest which promise even greater returns in money than the one he has chosen.

Aside from the injury proposed to be inflicted on the pharmacist, we deplore the effects on the doctor's patients if the programme is carried out, as inevitably the students will be poorly qualified to dispense the medicine even if he has the necessary remedies at hand. The doctor bases an argument against the apothecary on the fact that his prescriptions may be duplicated without his authority. We do not see that this can be remedied, except by the physician, who can, if he pleases, direct the patient to use the remedy for a limited time only. The pharmacist has no control over the patient or the prescription, and could not possibly prevent the patient from using it according to his own judgment.

From our point of observation, it seems that the pharmacist is entitled to the same consideration as the physician. The art of the apothecary is as ancient and as honorable as that of the physician. The progress made in the preparation and adaptation of medicines for the uses of the physician is, in a very great degree, the result of the pharmacists' labor and skill. The majority of pharmacists are as well educated and as faithful students as the majority of the physicians. They have expended a larger amount of time and money to acquire an education than most physicians have, their motives are as good, their behavior quite as free from reproach, and their vocation quite as necessary to the healing art. In former days, it was the general rule for the apothecary to prescribe for the sick. He was, in fact, the family physician. Only surgery and other special branches of the art were practiced by another class of persons. If the advice given by the doctor is to any larger extent adopted by the medical profession, it will not be long ere their occupation will be gone, and the ancient custom return to plague its last inventor. No one can doubt the ability nor treat lightly the opportunity of the apothecary to occupy his old ground, if forced, by such overreaching stupidity, to assume it.

We have, however, too much confidence in the intelligence of the profession, and in their desire to serve their patients faithfully, to believe that such advice will find a respectable following. Those who advocate it are either eager for notoriety or find their practice is unremunerative. To them all we would say, strive to become useful members of an honorable profession; there is honor and wealth awaiting you if your attainments justify such a reward, but only disaster and dishonor if, in striving for wealth, you endeavor to crush those who faithfully labor and study to advance the work of relieving the sufferings of the human family.

The present editor, as is well known, has for the past twelve months been desirous of retiring from the editorial responsibility of this journal, in order to devote his time to his personal business. The publishing committee having arranged for the future conduct of the journal by persons eminently qualified for the work, the editor will now say adieu to its many readers and patrons, with the hope that each one will do his utmost to support the PHARMACIST, and add to its already successful career as the only representative of pharmacy in the West. The journal will hereafter be conducted impersonally, and we hope this change will induce many contributions from those who have heretofore abstained from writing for its pages. We wish for the journal and its readers great prosperity and enhanced usefulness. "VALE."

THE POPULAR HEALTH ALMANAC.

We are in receipt of advance pages of this, to the profession, important publication. We will not at present attempt to go into details, but will leave a review of the same for the next issue of this journal. It will, however, be sufficient to say, that it is the duty of every high-minded pharmacist and druggist of the United States to assist in the general distribution of this, to the public, important medium of information, as well as to the drug trade a source of pecuniary gain. That the "NOSTRUM CONCOCTORS" are fearing the danger which is in store for them, by the publication and general distribution of the *Popular Health Almanac*, is readily perceived from a communication very likely penned by one of the "nostrum ring," and published in "Tilden's advertising sheet," called for general effect *The Druggist*. The occupation of the "nostrum maker" is only a question of time, if the medical and pharmacal professions do their duty in this respect, as the fates oppose the humbuggery in medicine at the present day.

NEW PHARMACAL JOURNALS.—The first numbers of two new exponents of Continental pharmacy have made their appearance during the present month. One, the *Journal de Pharmacie*, which is to be published fortnightly at Geneva, is written in the French language, and is intended to supply a want thought to exist through the only other Swiss pharmacal journal, *Schweizerische Wochenschrift*, being the organ of a society, and written in the German language. The second, *De Pharmacent*, is to be published at Groningen, in Holland, as a "Weekblad voor Pharmacie en verwante wetenschappen." Each of the new journals consists of four small quarto pages, and the *Pharmaceutical Journal* says there is already evidence in their promoters of a keen appreciation of the assistance advertisers may render to the progress of pharmacy.

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